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MASSACHUSETTS SOLID WASTE MASTER PLAN

1995 UPDATE

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COMMONWEALTH OF MASSACHUSETTS

William F. Weld
Governor

Argeo Paul Cellucci
Lieutenant Governor

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This Master Plan Update is published annually by the Division of Solid Waste Management and summarizes the state of the Commnwealth's Integrated Solid Waste Management System.

TABLE OF CONTENTS

Executive Summary 3

A Comprehensive Solid Waste System 3
Expanding the Recycling Economy 3
Disposal Capacity Needs Analysis 4
Managing Landfill Applications 4
Competitive Review of Disposal Projects 4
Progress on Closing Unlined Landfills 5
Conclusion 5

Introduction 7

Chapter One 7

Getting to 46% Recycling 11
Ten-Point Recycling Plan 12
FY96 CEF Ten Point Spending Plan 13
Challenges for 1996 and Beyond:
Access and Participation 13
Business Leadership and Investment 16
Procurement 16
Education 17
Transportation Costs 18
Inter-Agency Cooperation
and Coordination 19
Regulations and Legislation 19

Chapter Two 21

Introduction 21
Total Solid Waste Generation 21
Municipal Solid Waste Generation 22
Non-MSW Generation 23
The Integrated Solid Waste
Management System 24
Diversion 24
Residential Recycling
and Composting 24
Commercial Recycling
and Composting 25
Non-MSW Recycling 26
Solid Waste Disposal 26
MSW Combustion and Resource Recovery 26
Landfill Operations 27

Chapter Three 29

Introduction 29
Methods 29
Projections of Future Disposal Need 31
Permitting for Seasonal Changes
in Waste Generation 32
A Reasonable Safety Net 32

Chapter Four 35

Managing Landfill Applications 35
Background and Legal Authority 36
Sending the Proper Message of
No Need for New Capacity 38
Moratorium Exception for
Municipalities Under Consent
Orders to Close Unlined Landfills 39
Criteria and Process for Allocating
Disposal Capacity Among
Competing Landfill Projects 39
Competitive Review of
Landfill Proposals 39
Overview of Selection Criteria 40
Hierarchy for Ranking
Landfill Development Alternatives 41
Expansions within Previously
Site Assigned Areas 41
Greenfields or Expansions into
Unassigned Areas 41
Innovative and Alternative Options 41
Comparative Screening Criteria 43
Tier I Screening 43
Tier 2 Screening 44
Regulations for Conducting the
Capacity Allocation Process 46
Implementing the Selection Decision 46

Chapter Five 49

Construction and Demolition Debris 49
Biosolids 50
Hazardous Household Products 51
Batteries 52
Used Oil and Surplus Paint 53
MSW Combustion Ash Generation 54
Ash Disposal 54
Tires 55

EXECUTIVE SUMMARY

This1995 Solid Waste Master Plan Update documents the Commonwealth's progress in managing solid waste, projects trends over the next five years, and presents several new policies, including:

- The DEP Commissioner's decision to stop processing site assignment and permit applications for building or expanding landfills (due to the growth of the Massachusetts recycling industry, no additional municipal solid waste landfill capacity will be needed through the year 2000);
- The use of an enhanced needs analysis for disposal capacity that distinguishes between municipal solid waste and other waste streams (e.g., construction and demolition wastes);
- The replacement of the existing "first-in-line" approach to permitting disposal projects with a comparative evaluation of proposed disposal projects that will allow better decisions for the environment and more predictability for permit applicants;
- A specific commitment to continued progress in placing all remaining unlined municipal landfills on closure schedules by the end of this fiscal year.

All of these policy initiatives are based on the most accurate assessment of Massachusetts' solid waste management system ever completed, and all are aimed at supporting the job-rich market growth of the Massachusetts recycling industry.

A Comprehensive Solid Waste System

In 1994, Massachusetts generated nearly 9.71 million tons of MSW (residential, institutional and commercial) and non-MSW (construction and demolition debris and excavate, sludge and biosolids, and industrial waste), and recycled or composted nearly 42 percent of this combined total waste stream. Including the net import of 370,000 tons of MSW and non-MSW, the nine combustion facilities and 109 active landfills disposed of approximately six million tons.

Recycling and composting of MSW alone grew to 31 percent, up from 28 percent in 1992 and only 10% in 1990. Residential recycling expanded by more than one-third, with 143 communities now offering their residents curbside recycling. Stimulated by the strongest recycling markets in the last five years, commercial recycling also flourished, contributing half of the material recycled in Massachusetts.

Expanding the Recycling Economy

Recycling and composting have become firmly established over the last five years. Reducing the volume and toxicity of waste requiring disposal benefits the state's overall environmental quality and economic growth. Recycling stimulates economic growth by creating manufacturing feed stocks and new products, adding economic value and creating employment at each stage. Environmental businesses are the fastest growing sector of the Massachusetts economy.

Recognizing the environmental and economic development benefits of recycling, the Weld-Cellucci Administration created a Ten-Point Recycling Plan, funded by unclaimed bottle deposits, to help the state achieve its goal of recycling 46 percent of its municipal solid waste by the year 2000. Among FY96 goals and accomplishments:

- Nearly $3 million in recycling grants to municipalities and consumers;
- An expanded recycling education program;
- A new contract for the operation of the Commonwealth's Material Recovery Facility (MRF) in Springfield, which eliminated all operating costs paid by the state, saving more than $2 million annually, and will for the first time return revenue to participating municipalities;
- Doubled state procurement of recycled goods since FY94;
- Continued funding of a loan program to leverage millions of dollars in private investment in recycling;
- Promotion of innovative solutions to recyclable materials management by funding studies at the University of Massachusetts on recycling program participation rates, household hazardous product management options, and in-vessel composting.

Disposal Capacity Needs Analysis

Based on recycling rates, DEP projects that enough landfill capacity already exists to manage all the municipal waste projected to be generated through the year 2000. There is also adequate landfill capacity in 1996 for non-MSW. A shortfall of approximately 700 tons per day (tpd) of capacity for non-MSW is estimated for 1997, increasing to 1100 tpd in 1998, then peaking at 1200 tpd in 1999, before dropping to 1100 tpd in 2000.

Managing Landfill Applications

As a result of the new, more accurate needs analysis, the DEP Commissioner is declaring that DEP will stop reviewing site suitability and permit applications for construction and expansion of landfills. The Department expects to resume processing applications for the disposal of municipal solid waste in 1998. Application reviews for non-municipal solid waste projects may resume in 1997.

There will be a limited number of exceptions which will allow DEP to take appropriate actions regarding construction and operation of previously permitted projects, compliance and enforcement matters, innovative technology proposals and imminent public health threats.

An additional exception will allow DEP to approve short-term increases in the disposal rates of non-MSW at unlined municipal landfills if such increases will accelerate their closure and capping.

Competitive Review of Disposal Projects

To address the projected need for non-municipal solid waste disposal capacity after 1996, DEP will revise its regulations to allow for a comparative evaluation of disposal projects. The goal is to selectively permit those, as needed, that provide the greatest overall benefits to the Commonwealth's solid waste management system.

The present permitting system allocates disposal capacity to meet state-wide need based on the order in which applicants receive their final permit, a method that does not maximize opportunities to further the state's integrated solid waste management and environmental quality goals. Also, waiting to the end of the permit process to find out if there is any need remaining to be allocated does not meet the desire of most applicants for predictability in the amount of tonnage that their project may be granted.

The earlier draft of this update previewed key elements of a competitive selection process under which qualified projects would be categorized and compared across a broad spectrum of environmental impact, integrated solid waste management, and other performance criteria. The project(s), including those that employ innovative technology, that best meet these criteria would then be able to proceed through permitting review and operate consistent with projections for future disposal capacity need.

This final report affirms the basic concepts proposed in the draft with a clarification regarding the state's role in encouraging the development and testing of innovative and alternative waste management techniques and technologies.

Massachusetts is committed to promoting all types of innovative and alternative waste management and recycling solutions, including landfill mining. However, while the potential benefits of landfill mining are clearly worth pursuing, its viability has not been sufficiently demonstrated to rely on it as a *proven* means of meeting the Commonwealth's future disposal capacity needs. DEP will continue to evaluate the environmental and economic impacts of the landfill mining demonstration projects underway in Newbury and Fairhaven. The knowledge gained from these projects will form the basis for determining opportunities for this technology's future use.

The criteria and methods of implementing the competitive selection process will be adopted in regulations to be released for public comment within the next 60 days. Once adopted, the process will be initiated in 1996 for projects which are prepared to be operational to meet the non-MSW capacity need now projected for 1998.

Progress on Closing Unlined Landfills

DEP has made significant progress working with cities and towns to reach agreements to close unlined municipal landfills. Of the 20 sites deemed to pose a significant environmental or public health threat, all but one are either under a DEP consent order to close and cap by the end of 1996, or are being closed under the federal Superfund authority. Negotiations on the one outstanding significant threat site will be completed in December. Eighteen sites listed as potential threats are already operating under signed consent orders or permits which require closure no later than 1998. Negotiations to close the remaining 57 unlined municipal landfills should be concluded by the end of this fiscal year.

Conclusion

A fundamental component of the Administration's solid waste management agenda is ensuring that the quality of landfill operations and the capacity these facilities provide serve the Commonwealth's environmental *and* economic goals. Implementation of the policies detailed in this Update will serve both ends. It will support DEP's long-standing efforts to close landfills which present a direct threat to public health and the environment by helping communities to budget for capping costs. Closing these sites will also move recyclables out of landfills and into the production lines of Massachusetts mills.

Permitting disposal capacity in the absence of significant need impedes waste reduction and diversion and imposes unnecessary burdens on the environment and public health and well-being. Continued review of project applications would send a mixed signal to developers and

municipalities about the Administration's resolve to substantially reduce the Commonwealth's dependence on landfills. Reinforcing a clear message against overbuilding landfills will save private and public resources and encourage municipal officials to promote greater recycling and reduced reliance on landfill disposal.

Introduction

The Weld/Celluci administration is committed to achieving the Commonwealth's goal of recycling 46% of all Municipal solid waste by the year 2000. Reaching this ambitious but attainable goal will require continued innovative solid waste management in the Commonwealth.

This Solid Waste Master Plan Update presents the most up-to-date statistical and policy information on solid waste generation and disposal in the Commonwealth of Massachusetts. Using figures from 1994, DEP presents the amount of solid waste generated, its sources, and where it is going. This Update presents the administration's policies on waste disposal capacity management with a special focus on initiatives designed to promote recycling as a means to reduce the waste stream requiring disposal and provide materials to the state's burgeoning recycling industry.

In 1990, the Commonwealth's first Solid Waste Master Plan established the ambitious goal of recycling 46% of Municipal Solid Waste generated in the state by the year 2000. To date, the state has made impressive progress in approaching the recycling goal, but achieving this goal will require a renewed commitment to the five foundation elements of the Administration's solid waste management policy:

- Support the Massachusetts recycling industry by increasing the supply of recyclable material
- Expand and strengthen markets for recyclable materials by promoting purchases of products with recycled content
- Reduce the toxicity of the solid waste stream by promoting household hazardous waste recycling programs
- Close old, unlined municipal landfills in a cost-effective manner
- Manage development of new disposal capacity to avoid over-building capacity

The Administration recognizes the many job opportunities created by the recycling industry and other additions to the state economy made by paper mills, glass mills, and plastics manufacturers, among others. In terms of solid waste management, the administration's primary objective is to maximize the supply of recyclable materials available to the state's recycling industry by increasing residential and business access to recycling programs and by motivating participation. It is the administration's intent to foster the growth of the recycling-based industrial sector to the greatest extent possible. Through its solid waste management policies, the administration is sending a very strong message to the recycling industry: Massachusetts is committed to a) supplying enough recyclable materials for existing mills to operate without importing recyclables from other states; and b) creating the robust market necessary to attract new recycling industries to Massachusetts.

Impressive gains have been made in increasing residential access to recycling programs. Statewide, 97% of residents currently have access to either a curbside or drop-off recycling program, but improvements must be made to provide access to better and easier programs. Our goal is to ensure that all Massachusetts residents have access to such programs. As access is provided,

the focus of recycling programs must shift to promoting citizen participation by making programs easier to use, e.g. moving from drop-off to curbside programs in many communities, and educating people about the benefits of recycling.

The second component of the Administration's recycling strategy is to strengthen the market for recycled products by encouraging the purchase of recycled products. The state is taking the lead on this with its own purchases of recycled products. Spearheaded by the Department of Procurement and General Services (DPGS), this initiative has doubled the growth of recycled goods purchased by the state. In addition to leading by example, the state is educating municipal purchasing agents, businesses, and consumers about buying recycled products.

While the administration is committed to increasing supplies of recyclable material and encouraging the purchase of recycled goods in order to support the recycling industry, those are certainly not the only benefits of this focus on recycling. The third major goal of the state's recycling strategy is to minimize the presence of toxic materials in the solid waste stream by promoting source reduction, recycling and recapture programs for household hazardous products such as used motor oil, batteries, antifreeze, solvents, and paints. Reducing or capturing these toxic materials before they are disposed means keeping them out of our streams, our soil, and our air.

Increased recycling will lead directly to reduced environmental impact from waste disposal. Maximizing the percentage of recoverable material diverted from the waste stream will allow us to minimize the amount of disposal capacity necessary in Massachusetts. This translates into preservation of land which otherwise may have been pressed into service as a new landfill, and is actually enabling the state to close older landfills, some of which pose significant threats to the environment.

Currently, a significant quantity of the state's recyclable material remains in the waste stream headed to landfills and waste combustion facilities. However, recycling is reducing the need for solid waste disposal facilities, allowing the state to move forward with closure of old, unlined municipal landfills. Working with municipal representatives over the past year, DEP has signed consent orders, with fixed closure and capping dates, for 18 of the 20 communities operating landfills classified as significant threats to the environment. DEP has begun the process of signing consent orders with the other unlined landfills which were classified as potential threats to groundwater. DEP has signed consent orders for nine of these sites to date, and expects similar success in the year ahead with the 57 unlined facilities not currently operating under consent orders or reissued permits.

Complementing the closure of unlined landfills is DEP regulation and policy enforcement that will match the development or expansion of landfills to the Commonwealth's need for disposal capacity which is not otherwise met by recycling, composting or combustion with energy recovery.

This 1995 Update documents the continuing growth of the recycling economy and the challenges that lie ahead in achieving the Commonwealth's recycling goals. It also outlines the economic and environmental initiatives introduced by the Weld/Cellucci Administration to stimulate capital investments which have dramatically increased supply and demand in recycling markets.

Chapter One summarizes the plan for achieving the 46% recycling goal. The FY96 plan will continue to address barriers to recycling by working to further expand recyclable supplies, develop infrastructure, increase demand for products made and packaged with recycled materials and fewer toxins, and build partnerships with industry, universities, and the environmental community to foster integrated solid waste management.

Chapters Two summarizes how solid waste was managed in Massachusetts in 1994. The chapter enumerates how much waste was generated, how much was recycled and composted, and how the remaining material was disposed. For the first time, this update examines the gene-ation, recycling and disposal of non-municipal solid waste (non-MSW) in addition to municipal solid waste (MSW). This total-system perspective serves as the cornerstone of the Weld/Cellucci Administration's proposal to expand integrated solid waste management planning beyond the municipal waste component to include the entire solid waste stream.

Chapter Three projects MSW and non-MSW generation and disposal capacity in the future and how much, if any, additional disposal capacity will be needed to handle waste after accounting for recycling. Current projections show that no additional MSW disposal capacity will be needed through the year 2000, but that some additional disposal capacity will be needed starting in 1997 for non-MSW.

Chapter Four describes the regulations and policies which DEP intends to implement in response to the absence of substantial need for additional disposal capacity in the immediate future. The agency is declaring a moratorium on reviewing projects designed to generate new disposal capacity. The projected need for non-MSW landfilling will be met through consent orders increasing the non-MSW disposal rate at unlined municipal landfills to facilitate their closure and capping. To address the need for non-MSW capacity beyond 1997, DEP will adopt a method that competitively screens project proposals based upon how well they promote integrated solid waste management and their overall impact on environmental quality.

Chapter Five documents the progress being made in applying the principles of toxics use reduction, source reduction and integrated solid waste management to parts of the waste stream which present particular management concerns. Here the Update addresses construction and demolition wastes (C&D), biosolids, combustion facility ash, tires, and household hazardous products including batteries, used oil, and surplus paint.

The Appendices, available as a separate volume, include detailed descriptions of the methodologies for estimating capacity projections; information regarding each operating solid waste landfill and combustion facility; an overview of capacity projections; the new Policy on Approving Tonnage Increases to Facilitate Unlined Municipal Landfill Closures; a list of DEP publications; and other information regarding the solid waste management system in Massachusetts.

The next Solid Waste Master Plan Update, based on 1995 generation and disposal data, will be available in July 1996.

CHAPTER 1
Expanding the Recycling Economy

Getting to 46% Recycling

In 1990, when the first state-wide Solid Waste Master Plan was prepared, residential recycling was largely limited to bottle redemption and the state-wide recycling rate hovered near 10 %. With the release of that first Master Plan, the Weld/Celluci administration set an ambitious goal for the Commonwealth to recycle 46% of our solid waste by the year 2000. At the time, the goal seemed unrealistic to many. Yet today, with a 1994 combined recycling/composting rate of 31 %, Massachusetts is on its way to reaching the target diversion rate. Together the Executive Office of Environmental Affairs (EOEA) and the Department of Environmental Protection (DEP) have developed a ten-point recycling plan designed to bring the 46% diversion rate within reach by the year 2000. This plan recognizes that waste diversion is not only a new model for environmental protection, but also an engine for economic growth. Presented below is a state-wide recycling strategy demonstrating the Weld/Celluci administration's commitment to achieving the recycling goals established in the 1990 Master Plan.

The DEP's Comprehensive Waste Prevention Strategy consists of three objectives:

- Reduce both the volume and toxicity of all types of waste;
- Divert as much waste as possible from the waste stream by promoting reuse and recycling of appropriate materials.
- Dispose of unrecoverable solid waste in an environmentally sound manner;

This strategy will create permanent gains in environmental quality and business efficiency while promoting the environmental industry in Massachusetts. Environmental businesses are increasingly important to the Massachusetts economy, adding jobs faster than any other sector of the state's economy. In 1992, recycling businesses alone added $600 million in value to the Commonwealth's economy and supported 10,000 jobs. Since then, the value of exported paper, plastic, and aluminum has increased four-fold; the Hyde Park paper mill has reopened and employed 125 people; three smaller scale plastic recyclers have opened; a glass processor has opened; and the Massachusetts Industrial Financing Agency has announced the opening of a major new recycled paper mill in Fitchburg which will convert over 600 tons of office paper into deinked market pulp each day. Furthermore, the tens of millions of dollars in equipment for the Fitchburg plant is being manufactured by Beloit Industries of Dalton, Massachusetts, while plant construction is expected to create one hundred construction jobs.

At the same time that new jobs are being created by the recycling industry, the prices commanded by recycled materials have risen. For example, in 1990 paper mills accepted recycled newspaper at no cost, leaving municipalities to bear the full cost of transportation. Today, the same mills pay at least $75 per ton for delivered newspaper, providing revenue for municipal recycling. These positive revenues for paper now far outweigh landfill tipping fees which currently run from $30-$65 per ton. Similarly, while the State paid an average of $35 per ton to the private operator of the Commonwealth's Material Recycling Facility in Springfield (SMRF) during the facility's first five years, the new ten year contract involves no cost to the Commonwealth. In fact, the contractor is now paying the member municipalities a minimum of $20 per ton for their recyclables.

While increased demand and better prices have helped with the operating costs of public and private recycling programs, these very same conditions have made it more difficult for smaller Massachusetts paper mills to compete for recycled feedstock. At least one recycled tissue converting mill has closed since 1992, and several other mills have been unable to operate at sustainable levels. The recent swing of very high recyclable paper prices appears to have subsided, but has demonstrated that prices for recycled materials need to be stabilized by increasing supply. The Commonwealth, through its waste management policies and programs, is taking positive action to foster and support the recycling industry by rationing disposal capacity and supporting residential and commercial recycling programs.

While markets for materials such as HDPE and PET plastics have improved significantly, making recycling of these materials far more cost-effective than in the past, the Commonwealth is focusing on stepping up recycling rates for all materials, particularly paper. These efforts enable paper mills and other recycling industries to remain in business while attracting new recycling businesses to the state. A steady supply of locally generated recyclable materials will support the recycling industry, encourage future growth, keep smaller mills competitive, and eliminate the need to look out of state for raw materials, thereby reducing transportation costs and regional competition.

Ten-Point Recycling Plan

The centerpiece of the strategy to increase recycling within Massachusetts is the Ten-Point Recycling Plan, first established in the 1994 Solid Waste Master Plan Update. The original Plan addressed seven barriers to recycling (Table 1-1). While much progress has been made in addressing these barriers, and market uncertainty is no longer a significant barrier, other barriers which have become apparent need to be addressed if the state is to reach its 46% recycling goal (Table 1-2). The current Plan will continue to address programs begun in FY95, including improvements in providing access to recycling programs and encouraging participation in programs; public education; collection of recyclables; processing and marketing of recyclables; use of recylables in manufacturing of products; encouraging development of the recycling infrastructure; and purchasing of commodities with recycled content. Additional effort will focus on improving proper and cost-effective management of Household Hazardous Products (HHP) and other difficult-to-manage wastes, and increasing the composting of organic wastes (Table 1-3).

Implementation of the Ten Point Plan is made possible in part by funds from the Clean Environment Fund. CEF is the repository for unclaimed bottle deposits of which $5 million was appropriated by the Legislature in FY95 and $4.18 million in FY96. These funds were used to address the identified barriers to recycling through grants, loans, and technical support designed to increase residential access to recycling, reduce the cost of transporting recyclables to processors, stimulate capital investment in recycling businesses, increase demand for products made with recycled material, and focus academic research on innovative solutions to recycling issues.

Table 1-1: Seven Barriers to Recycling Identified in the 1994 Master Plan

Market Uncertainty
Transportation Costs
Insufficient Public Education
Poor Regional Cooperation
"Put-or-Pay" Contracts that Discourage Recycling
Lack of Trained People and New Technologies
Excess Capacity at Unlined Landfills

In FY95, DEP and EOEA distributed $3 million in grants to over 200 cities, towns, and regional groups for curbside recycling bins, roll-off containers, recycling trucks, and public education materials. Requests for this type of recycling equipment greatly exceeded the amount DEP was able to grant. Grants also funded two regional recycling transfer stations. CEF funded plastics research at the University of Massachusetts, a recycling internship program at the Springfield Materials Recovery Facility (SMRF), and several new programs designed to stimulate growth in the recycling industry. A detailed discussion of the FY95 CEF Recycling Program is included in Appendix B.

Table 1-2:
FY96 Barriers to Recycling

Private Haulers Not Providing Recycling Services to Clients
Lack of Full Participation in Recycling Programs
Transportation Costs
Insufficient Public Education
Poor Regional Cooperation
"Put-or-Pay" Contracts that Discourage Recycling
Lack of Trained People and New Technologies
Excess Capacity at Unlined Landfills
Insufficient Purchases of Recycled Products

FY96 CEF Ten Point Spending Plan

The FY96 CEF spending strategy (Table 1-3) is intended to build upon the Ten Point Recycling Plan established in FY95. Through the aggressive steps detailed below, we will continue to knock down the last barriers to full participation in residential, commercial, and municipal recycling programs.

The Governor's commitment to using CEF funds for recycling programs is reflected in his budget request for $10 million to fund the CEF in FY96. However, the Legislature appropriated $4.18 million. These funds will allow the continuation of FY95 programs, but continued low levels of CEF appropriations may jeopardize the state's ability to reach its 46% recycling goal. It is therefore the hope of EOEA and DEP that the legislature will increase funding from the CEF in the coming year to enhance recycling programs throughout the Commonwealth.

Challenges for 1996 and Beyond: Access and Participation

Given the major capital investments recently made by the local recycling industry and the number of recycling jobs created in Massachusetts, it is important for the state to ensure that these businesses have the steady supply of recyclables needed to thrive. EOEA and DEP hope to increase this supply by motivating complete state-wide *access* to residential and commercial recycling programs and promoting full *participation* in those programs.

Since 1990, DEP's recycling program has focused on providing access by working with muncipalities to develop new recycling programs and encouraging program upgrades from drop-off to curbside collection. Residential access to curbside collection increased 40% from 1992 to 1994, and since July 1994, several cities, including Watertown and Boston, have either begun curbside recycling or switched to curbside from less productive drop-off programs. Curbside programs now serve 4.2 million Massachusetts residents in 143 curbside cities and towns. Across the state, 97% of the population now has at least minimal access to either a drop-off or a curbside program. The focus of the access issue is now shifting to program upgrades: encouraging communities with curbside trash collection programs to provide curbside recycling programs; and expanding existing curbside programs to collect additional materials.

MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
TEN POINT RECYCLING PLAN – FISCAL YEAR 1996 BUDGET PLAN

Massachusetts consumers and businesses currently recycle and compost over 31% of the approximately 6.5 million tons of residential and commercial solid waste generated annually. To reach its goal of 46% recycling and composting by the year 2000, the Commonwealth must continue to overcome a number of barriers to recycling. The 10 programs identified below aim to "close the loop on recycling" by allocating $4 million in CEF funds and $1 million in bond funds in four main areas that will lower the cost of recycling for cities and towns: collection, processing, remanufacturing, and procurement.

I. Municipal Recycling and Composting Equipment Grants – $1,291,000

To assist local recycling and composting programs.

Most consumers who want to recycle rely on municipal services to provide convenient access to recycling. By granting set-out containers, roll-off containers, recycling trucks, home composting bins, and other capital equipment, DEP and EOEA lower the start-up costs for municipalities instituting these services. In FY96, DEP received 230 applications requesting $3,675,000 in recycling equipment.

II. Public Education and Recycling Participation – $1,070,000

To fund recycling materials, school recycling programs, and technical assistance for consumers.

Over 85% of Massachusetts consumers have convenient access to recycling services for over 50% of their recyclables at their homes and workplaces. But recycling has not reached its full potential due to lack of participation in these existing recycling programs. This initiative aims to boost participation in recycling programs through annual mailings direct to households, unit pricing material grants, promotion of recycling at public schools, and printing of municipal recycling guides. The largest part of this program — customizing and mailing municipal recycling program information — had requests for 5,800,000 mailings worth $1,842,000 in 1996. These pieces are produced and mailed at bulk rates, costing the state less than half of what municipalities would pay producing their own materials.

III. Municipal Household Hazardous Waste Program – $241,000

To fund equipment and programs for the collection of used paint, motor oil, batteries, tires, and hazardous household products.

As expansion of collection programs for new recyclables become the trend in the 1990's, DEP and EOEA look beyond typical recyclables to examine the toxicity of household wastes as a method of prioritizing reduction and recycling investments. Several new programs have been instituted for the collection of household hazardous products, including paint and oil collection equipment and master service contracts for automotive wastes (including either municipal removal or consumer-direct lube service contracts). DEP received 260 pieces of HHW equipment were requested for FY96 awards, worth $515,000.

IV. Recycled Product Procurement Program – $300,000

To increase the purchase of recycled products in state and municipal agencies, businesses, and among the public.

During the past year, new recycling investments, including recycled paper mills (Fitchburg), plastic recyclers (Auburn), and glass recovery plants (Franklin) have been critical to creating markets for commercial and municipal recyclables. Yet these investments could fail if the government does not in turn purchase the recycled products as finished goods. In FY96, the CEF will fund two full-time recycling procurement positions (at DPGS), studies to increase the purchase of recycled materials by highway departments and businesses, and the Massachusetts Packaging Challenge, a voluntary recycled packaging award ceremony.

V. Municipal Recycling Transfer Station Grants – $ 0

To decrease transportation costs and increase collection efficiency for regional recycling facilities

In FY95, $420,000 funded two new transfer stations for collection of recyclables in North Adams and Sandwich. Cape Cod and the Northern Berkshires are two areas without a MRF and without the tonnage to attract one. While no money has been allocated to this program for FY96, DEP will investigate additional recycling transfer station grants, and smaller grants to convert existing transfer stations to recycling uses (e.g. addition of weigh scales, dedicated trailers, etc.) that could be funded in FY97 if sufficient funds are allocated by the legislature. These recycling collection points also allow Massachusetts paper mills to purchase feedstocks in large-quantity, loose form, while not competing against private MRFs for full-scale processing of recyclables.

VI. Municipal Recycling Assistance Program – $400,000

To provide incentives to municipalities to develop and implement specific programs and increase recycling

DEP's Municipal Recycling Rules focus on the lowest common denominator - the minimum requirements (e.g. drop-off recycling centers in large cities) to provide access to recycling. This program awards more aggressive programs with a per-ton "bounty" grant paid for recycling. In order to be eligible for the tonnage reimbursements, participating communities must take steps which are inefficient to implement at the state level (e.g. anti-scavenging by-laws, household hazardous waste collections, municipal recycled purchasing efforts), and must provide top-of-the-line recycling access to all residents. NESWC communities, which face strong put-or-pay penalties, have been selected as the pilot for a statewide "Municipal Recycling Assistance Program" in FY95 and FY96.

VII. Technical Assistance Programs – $465,000

To increase source reduction, composting and recycling through directed research, cooperative management, and recycling of difficult to manage wastes

Special studies to address recycling program participation rates, media marketing, research construction and demolition debris management options for Cape Cod, and other research activities are funded through this program which allows both municipal and private consulting firms to propose efforts to address recycling barriers on the local or macro level.

VIII. Higher Education and Research and Development Programs – $422,000

These programs provide for: an internship program through UMass campuses which places students with recycling businesses, government agencies and non-profit organizations; R&D through UMass focused on plastics recycling; management of household hazardous products; waste reduction; recyclables collection costs; and market research. DEP and EOEA seek to create an increasing level of research partnership with the university systems, and to employ students to solve recycling problems.

IX. Recycling Business Development/Loan Program – $1,000,000

To increase technical and financial resources available to recycling processors and manufacturers

In the FY95 pilot phase, $350,000 was provided to three recycling businesses. Up to $1.0 million in additional funds will be contracted for in FY96 to significantly expand this program.

X. Springfield Materials Recycling Facility – $103,000

To fund support staff

The Springfield facility serves 100 municipalities in central and western Massachusetts and processes over 225 tons of recyclables per day. While the private SMRF operator is now completely funded through the sale of materials, and provides $900,000 annually in payments to participating communities, DEP still employs weigh scale masters and project managers to oversee this project and has a commitment to providing matching funds/services to designated SMRF education funds.

These 10 programs were funded from the Clean Environment Fund (CEF), which receives its revenues from unclaimed bottle deposits. The CEF was established by the Lesiglature for the purpose of enhancing solid waste recycling and source reduction programs.

The first annual Recycling Report Card, published in February 1995, showed that providing access to recycling does not consistently guarantee high-level participation. Therefore, as access continues to grow, DEP is focusing less attention on helping to establish new programs and more on expanding participation. High priority is being given through the equipment grants program to providing up-to-date information to citizens and schools about how their community's recycling program works; funding of regional education coordinators and purchase of educational materials; and implementation of unit-based pricing systems to promote source reduction and provide dedicated solid waste management revenues.

DEP and EOEA continue to foster participation in home composting through grants for home composting bins. Leaf and yard waste composting has proven to be a highly effective method of reducing the amount of residential solid waste collected for disposal. DEP is continuing to work

with groups such as the pushcart vendors in Boston's Haymarket. Provided with access to composting bins, Haymarket vendors have diverted nearly 1,000 tons of food waste. DEP is looking to increase the amount of material diverted under this program and to combine it with animal manure composting at the Franklin Park Zoo. These initiatives serve as models for composting programs to serve other distribution centers such as the Chelsea Market, the Boston Flower Market and other similar facilities in the state.

The need to provide access to recycling and expand participation does not rest solely with cities and towns. Private waste haulers must also provide recycling services in addition to trash collection in communities where they operate. Many private subscription haulers collecting trash from thousands of households are not providing adequate access to recycling, thus undermining local drop-off recycling programs and curbside collection contracts. Through voluntary incentives, local Board of Health waste hauler licensing requirements, and waste bans established in the solid waste regulations, all waste haulers are encouraged to provide recycling services to their customers. EOEA and DEP will work with haulers, municipalities and disposal facilities to ensure that all of these recycling services are provided.

Business Leadership and Investment

Increased participation in residential recycling programs alone will not bring us to the Commonwealth's waste diversion goal. Since more than half of all Municipal Solid Waste (MSW) is non-residential, commercial waste generators must lead the way in pursuit of our 46% target by providing recycling services to their employees and customers. In addition, businesses must continue to expand their use of recycled materials in production and packaging. Since 1993, the Weld/Celluci administration has rewarded corporate leadership in recycled materials use through the Governor's Packaging Challenge. The Challenge, which recognizes businesses for increasing the amount of recycled content in their products or packaging, has attracted an increasing number of award recipients each year. To foster development of new recycling businesses, the administration is also continuing the Recycling Business Loan Program initiated in FY95. These loans spur investment in recycling businesses by providing financial incentives and access to capital markets. More than 150 businesses have inquired about the program which has already approved $350,000 in loans for three recycling-related businesses. These businesses cover a diverse range of business types and waste materials. The loan fund will receive an additional $1 million in FY96 allowing for a significant expansion of the program.

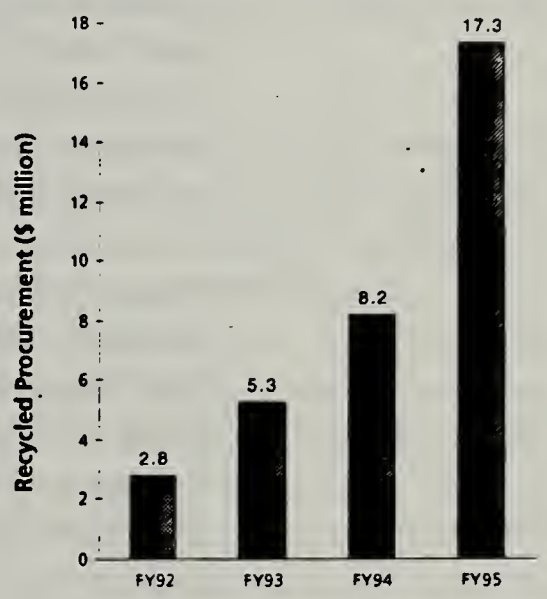
In many instances, exchanging information and building partnerships can be as effective as direct financial incentives in motivating change among businesses. Through its support of WasteCap, a non-profit business-to-business technical assistance organization, DEP provides technical and support services as well as assistance to firms interested in proving to themselves that waste prevention and recycling make good business and environmental sense.

Procurement

The Commonwealth has made significant strides in closing the recycling loop by significantly increasing its own purchases of products with recycled content. Empowered by Governor Weld's Clean State Executive Order and technical support provided through the Clean Environment Fund, the Department of Procurement and General Services (DPGS) rewrote its own purchasing specifications. These changes have resulted in a 55% increase in state purchase of products with recycled content and other environmentally preferable products since FY93 and an increase of

over 300% since FY92 (Figure 1-1). DPGS has also launched a series of "Buy Recycled" workshops for state and local purchasing officers, targeting such end-products as: highway construction materials, plastic lumber, paper products, recycled paint, and re-refined oils. Figure 1 shows the dramatic increase from 1990 to 1994 in state dollars spent on recycled products. DEP and DPGS are exploring other products and master service agreements that will result in further purchases by state agencies and municipalities of products with recycled content. These additional products, including re-refined waste oil, recapped tires, and recycled paint will be field-tested and evaluated by more than 10 agencies and the results will be used to encourage future purchases of these products. EOEA and DEP are also working with industry groups to reach out to consumers through point-of-purchase and multi-media "buy recycled" promotions to increase state agency purchase of recycled content.

Figure 1-1: State Procurement of Recycled Goods



Education

DEP and EOEA realize that if the state is to reach the recycling goals set for the year 2000, we must invest in the education of state residents and businesses as well as the training of individual students in recycling technologies. In order to accomplish this, the two agencies have developed five programs that promote a knowledge and understanding of solid waste issues, encourage participation in recycling programs, and assist with development of waste diversion programs in public schools.

To respond to the need for increased participation rates in municipal recycling programs and enable communities to achieve higher recycling rates, EOEA and DEP developed a pilot recycling participation media campaign. The pilot campaign, first attempted in Salem, Peabody, and Marblehead, was intended to study the extent to which recycling education can increase municipal recycling rates. Components of these three short-term campaigns included: public service announcements on radio, cable TV, and in newspapers; 2,500 posters distributed; 10,000 flyers distributed through 17 retail outlets; seven print and broadcast media interviews completed leading to five articles; information on community television bulletin boards; and outreach to community recycling coordinators. Long-term results will be measured in increased recycling participation rates. EOEA and DEP will develop a state-wide campaign in FY96, enlisting the support of both the recycling industry and the environmental community.

One of the state's finest resources is its students – future leaders, business people, and entrepreneurs. Teaching students about solid waste management and recycling is not only an investment in the future, but can also produce immediate benefits as these students inform their parents about the value of recycling and composting. The Recycling Education Assistance for Public Schools (REAPS) Program delivers classroom and assembly presentations on a variety of solid waste issues including source reduction, recycling, composting, and management of household hazardous

products. The REAPS Program also offers teacher-training sessions for Professional Development Points (PDPs) on solid waste, as well as technical assistance in the planning and implementation of school recycling and composting programs. REAPS services are available free of charge to public schools grades K-12 and selected state and/or community colleges throughout the state. All those affiliated with these institutions, including educators, administrators, parents, students, and maintenance and cafeteria staff are encouraged to participate. Municipal recycling coordinators are also encouraged to take advantage of REAPS services.

Our schools are displaying a tremendous interest in solid waste issues, with many now providing classroom units on the topic. To assist in this area, DEP has developed a comprehensive 1995 Solid Waste Management Resource Guide for Massachusetts Schools, a curriculum guide for grades K-12 providing an overview of solid waste issues in Massachusetts and suggestions for classroom activities dealing with recycling, composting, hazardous waste, source reduction/reuse, and a host of other topics. The guide, which is available free of charge, also contains a listing of resources available to educators including state and local agencies and non-profit groups, instructional resource materials, and solid waste entertainers.

In the past, students interested in recycling had little opportunity to learn about and work in the industry. As a result, the recycling industry has not had specifically trained graduates to attract to their industry, and students have not had a practical, hands-on means to learn about the recycling industry. The Recycling Internship Program, established in FY95, will help fill this gap. This program, which has continued in FY96, places undergraduate and graduate college students in recycling related positions in businesses, city and state government agencies, and non-profit organizations. As part of the program, interns have the opportunity to promote recycling by encouraging local businesses to establish recycling programs, promoting state and local recycling public education efforts, and implementing outreach programs aimed at increasing recycling rates. In FY95 17 students received recycling internships with businesses, municipalities, non-profits, and universities. Applications for this popular program, which is expected to grow during FY96, are sought from students throughout the UMASS college system as well as from Roxbury and Bunker Hill Community Colleges.

The CEF also funds coordinator positions for several regional solid waste management districts or consortiums. Coordinators educate their communities about available recycling services, work with municipal officials to improve existing programs, and assist in obtaining more cost-effective services through the development of regional waste management and recycling contracts. Providing recycling coordinators to regional groups greatly facilitates the expansion of recycling programs since many regional groups do not have sufficient funds to provide for full-time staff devoted to recycling and waste management issues. Furthermore, developing a state-wide network of recycling coordinators allows for information exchange and coordination of services.

Transportation Costs

Transporting recyclables from a community to the recycling facility is, in some cases, a significant cost of program expansion. Despite the fact that recent market prices for recyclables are helping to defray program costs, transportation expenses may remain a significant barrier to the success of community programs. CEF funds will be used to provide large transfer trailers and to assist in the construction of several regional recycling transfer facilities. Two recycling transfer stations

were partially funded during FY95 in North Adams and Sandwich. There are no funds available for this program in FY96 due to the legislature's funding cuts; however, applications have been solicited from municipal and regional groups in the hope that there will be sufficient funding of the CEF program in FY97.

Inter-Agency Cooperation and Coordination

The Administration recognizes the need for its agencies to work with each other to define common goals. EOEA and DEP have worked together with the Department of Food and Agriculture for the past several years to promote composting at farms, stables, and nurseries. Looking for new allies, DEP is working with the Massachusetts Highway Department (MHD) to increase the use of recycled content products and materials in highway construction projects. A FY95 study listed a number of recycled products which could be used immediately by MHD, and proposed that the department research the feasibility of using several other listed materials. DEP will continue to work with MHD and the University of Massachusetts to ensure implementation of the study's recommendations during FY96. Over the next year, DEP and the Department of Corrections will develop pilot composting operations at state prisons to better manage cafeteria waste, paper, biosolids, and bedding materials generated within the prison system, along with traditional landscape materials, and possibly including such materials from surrounding communities.

In addition to the DPGS efforts described earlier in this chapter, EOEA and DEP are working with several other state agencies on projects that will contribute to advancing the Governor's Clean State Initiative and reaching the state's recycling goal. The Department of Environmental Management (DEM) will receive recycling sheds, containers, and educational material to enhance recycling programs in state parks. EOEA is also working with the Bureau of State Office Buildings (BSOB) to promote the recently expanded office recycling program in the Saltonstall and McCormack Buildings and in the State House. In addition, EOEA, BSOB, DEM, the Massachusetts District Commission (MDC), and the Massachusetts Water Resources Authority (MWRA) are promoting the beneficial reuse of biosolids as fertilizer at state facilities. For example, DEM applied biosolids at 40 state forests and parks in 1995, MDC is applying biosolids at several stadiums and flower beds, and BSOB is applying biosolids at the State House and on the grounds of other state office buildings. Finally, CEF funds will be used to provide Pollution Prevention Training for Clean State Coordinators throughout state agencies.

Regulations and Legislation

While the recycling strategy described here relies primarily on voluntary initiatives, the Administration recognizes that legislation and regulations can also stimulate change, remove barriers, and provide uniform, enforceable standards. DEP has already removed several regulatory barriers to potential recycling operations by amending the Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) and the Solid Waste Management Facility Regulations (310 CMR 19.000). These amendments completely eliminate the need for a site assignment or permit for many recycling facilities and provide a simplified review process for other recycling facilities not qualified for an exemption. The Solid Waste Regulations now restrict the disposal of many types of recyclable materials, thereby increasing the amount of material diverted to recycling facilities. The bans on disposal of recyclables are enforced through facility inspections and Department-Approved Recycling and Composting Programs which have proven to be effective in expanding access to municipal recycling collection programs and stimulating investments by the recycling industry. Rules banning disposal of recyclable paper and plastic took effect in January 1995,

completing a waste diversion program initiated in 1990 that now covers seven different categories of recyclable materials. During the coming year, EOEA and DEP will work with the Solid Waste Advisory Committee and other interested parties to improve the effectiveness of the recycling rules in increasing access to and participation in programs that move the state toward greater waste diversion and minimize reliance on landfills. DEP will also promulgate compost facility rules that outline siting, performance and design specifications for large-scale municipal waste composting operations. Currently, there are no specific rules governing these facilities.

Several pieces of state legislation have been introduced to stimulate recycling and improve management of various waste streams. The Administration has voiced support for two measures designed to increase recycled content of packaging materials. House 2237 would require product labels to state the recycled content of packaging, thus allowing consumers to demonstrate to manufacturers, through their purchasing decisions, their concerns about reducing excess packaging and increasing recycled content. House 2618 would require most packages sold in Massachusetts to have a minimum recycled content or be composed of materials recycled in the state.

As part of on-going efforts to reduce the volume of heavy metals in the waste stream, DEP and EOEA have been working with legislators to enact a measure banning the sale of certain types of batteries that contain more than de minimis amounts of mercury and requiring the recovery and recycling of rechargeable batteries containing cadmium and "button cells" containing mercury. DEP and EOEA are also reviewing proposed legislation and developing a position on how best to encourage the recycling of tires and the cleanup of existing tire piles.

CHAPTER 2
Generation and Management of Solid Waste in Massachusetts, 1994

Introduction

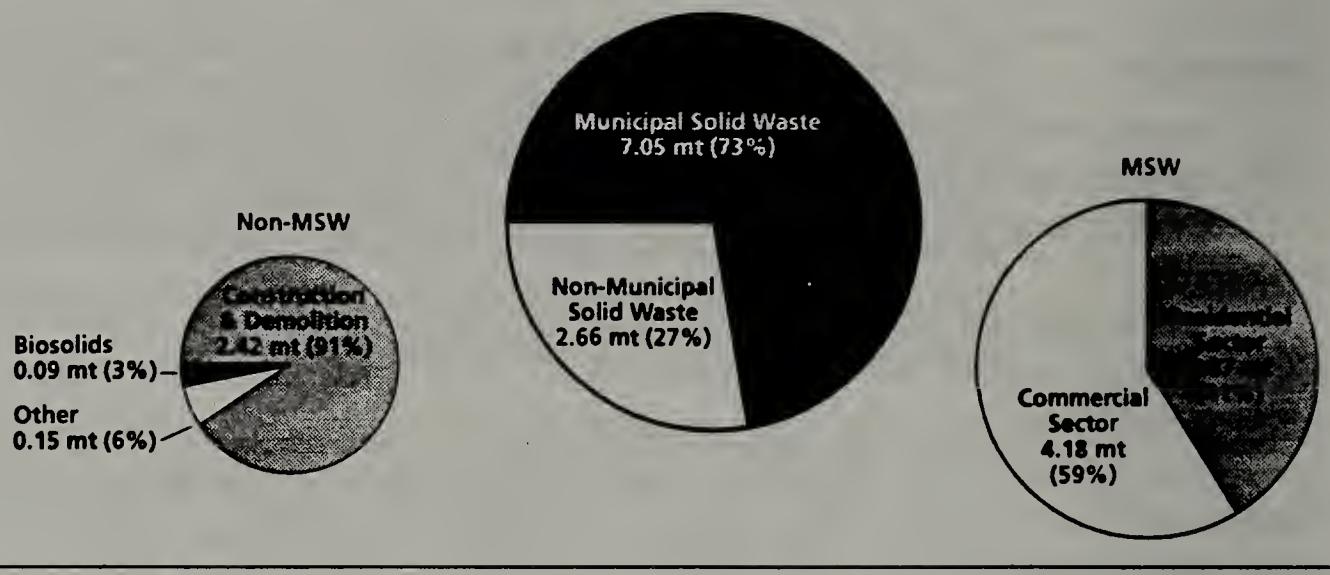
This chapter presents a comprehensive examination of solid waste generation and management in Massachusetts during 1994. The information summarizes the most far reaching effort at collection, analysis, and presentation of solid waste data undertaken since DEP began reporting this information in 1990. Appendix A, Summary of Methodologies, describes the methods used to develop the values presented in this chapter. Information comparing 1994 data with data from previous years is also presented. Using the structure of Table 2-1, this chapter focuses first on solid waste generation and then on solid waste management.

Prior to this Update, DEP lacked adequate data on recycling and processing of non-MSW. Thus it was impossible to properly estimate the amount of future non-MSW that was likely to be diverted to recycling, and how much was likely to require disposal. Non-MSW is predominantly construction and demolition debris (C&D), but also includes residuals from water and waste water treatment (sludges and biosolids), industrial wastes, and waste generated by public works departments. To obtain this type of information, DEP conducted an extensive survey of Massachusetts C&D waste processors in 1994 to determine the amount processed and landfilled. DEP also surveyed municipal waste-water treatment plants (WWTP) to determine where these facilities dispose their biosolids and how much is currently disposed at solid waste landfills. Based on this new information, DEP is now able to make reasonable projections for generation and management of non-MSW. These projections are incorporated into estimates of future disposal capacity required for the total solid waste system described in Chapter 3.

Table 2-1: Integrated Solid Waste Management System Overview

Total Generation (includes 426,000 tons of exported waste)			**9,710,000**
MSW		7,050,000	
	Residential	2,870,000	
	Commercial	4,180,000	
Non-MSW		2,660,000	
	C&D	2,420,000	
	Biosolids	90,000	
	Other	150,000	
Total Management (includes a net import of 370,000 tons)			**10,080,000**
Diversion			4,060,000
MSW		2,160,000	
	Residential Recycling	420,000	
	Commercial Recycling	1,070,000	
	Residential Composting	440,000	
	Commercial Composting	230,000	
Non-MSW		1,900,000	
	C&D	1,900,000	
Disposal			6,020,000
Landfill		2,680,000	
	MSW	1,900,000	
	C&D	550,000	
	Biosolids	90,000	
	Other	140,000	
Combustion		3,340,000	
	MSW	3,320,000	
	Non-MSW	20,000	

Figure 2-1: Total Municipal Solid Waste Generation in 1994 (mt = million tons)



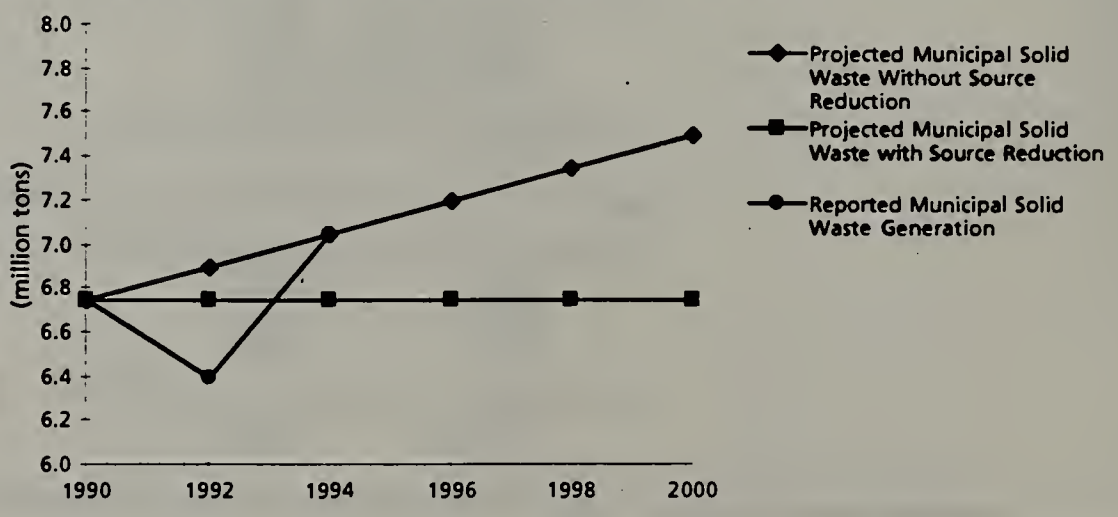
Total Solid Waste Generation

An estimated 9.71 mt (million tons) of solid waste was generated in Massachusetts in 1994, (Figure 2-1) consisting of 7.05 mt of Municipal Solid Waste (MSW), and 2.66 mt of Non-Municipal Solid Waste (non-MSW). These estimates include 426,000 tons of mixed MSW and non-MSW that was exported out of state for disposal. Many factors such as the economy, population levels, and the sucess or failure of source reduction, influence total waste generation. Since this is the first year that detailed estimates are available for Non-MSW generation, current total waste generation data cannot be compared with historical figures.

Municipal Solid Waste Generation

The 7.05 mt of MSW generated within the Commonwealth consists of residential waste from homes and commercial waste from businesses and institutions. DEP estimates that the annual generation of total MSW increased 650,000 tons since 1992 (Figure 2-2). Commercial Waste, estimated at 4.18 mt, increased considerably during the same period, while Residential generation, estimated at 2.87 mt, or 900 pounds (0.45 tons) per person, did not change significantly. This per capita generation figure compares favorably to target values published in the EPA's *Characterization of Municipal Solid Waste in the United States: 1994 Update.* Four factors contributed to no growth in residential generation: a sluggish economy, increased home composting, source reduction, and adoption of unit based pricing programs by municipalities.

Figure 2-2: MSW Generation and Source Reduction, 1996-2000



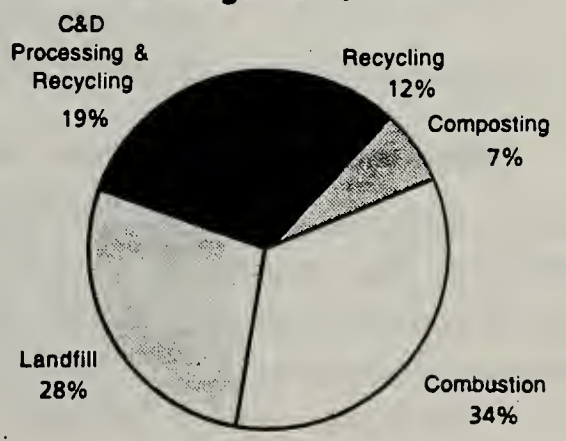
Home composting is the diversion of organic waste from disposal facilities to backyard compost bins. Home composting programs have been actively supported by DEP through composting bin grants and home composting training seminars. Over the past three years 15,000 composting bins have been distributed through the grant program, leading to significant state-wide expansion of home composting. At the national level, the success of home composting has prompted EPA to take an unprecedented step to reduce its projected growth rate for residential solid waste.

Source reduction is another important factor in limiting the levels of residential generation. Manufacturers play an important role in source reduction by designing and using lighter and smaller packaging. Individuals, local governments, and businesses contribute to meeting source reduction goals by purchasing products with minimal packaging.

There is as yet no definitive data on the impact of unit based pricing in the 49 Massachusetts municipalities that have adopted such systems. However, studies in other states have demonstrated that this type of source reduction program can help significantly reduce per capita levels of waste generation. Unit based pricing programs charge individual households for waste disposal based on the volume or weight of material disposed while generally providing free recycling programs. In this way, unit based pricing encourages waste reduction through home composting, more thoughtful purchasing decisions, and increased recycling.

The principle difference between 1992 and 1994 was the higher amount of commercial waste generated in 1994. The ratio between residential and commercial waste generation in 1994 was 1:1.5. Other industrial states typically have ratios closer to 1:1. The reasons for a higher proportion of commercial waste in Massachusetts are not readily apparent and may be a result of errors in data reported by facilities regarding the amount, category, and sources of waste disposed in 1994. For the next Update, DEP will work with the Department of Revenue to obtain information on particular business sectors which may assist in directly estimating commercial waste generation.

Figure 2-3: Total Solid Waste Management, 1994



Non-Municipal Solid Waste Generation

Non-MSW generation consists of all materials not generated by households or businesses in the Commonwealth. Construction and demolition waste (C&D) dominates this category, with

Figure 2-3a: Total MSW

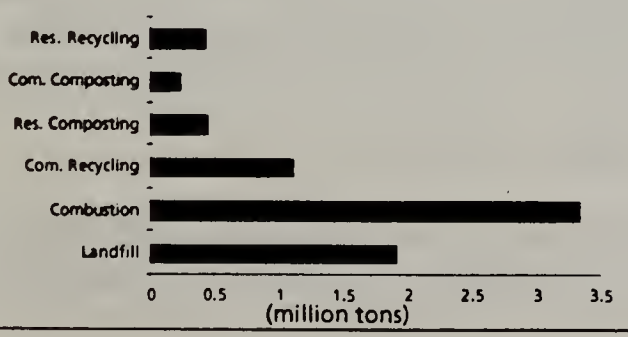
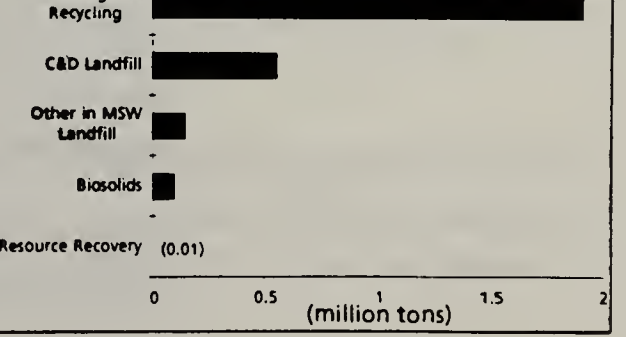


Figure 2-3b: Total Non-MSW



smaller amounts of wastewater treatment plant (WWTP) sludges or biosolids (only to the extent that the biosolids are co-disposed with MSW), recycling residuals, contaminated soils, and other wastes that may include industrial solid wastes. Non-MSW generation for 1994 is estimated to be 2.66 mt. Construction and Demolition (C&D) waste is significant for its large share of non-MSW. C&D waste includes debris generated from construction, renovation, repair, and demolition of roads, bridges, and buildings. It includes wood, steel, concrete, masonry, plaster, metal, and asphalt, but not wood from land-clearing, i.e. stumps, logs, brush, and soil, nor rock from excavations. A more thorough discussion of C&D waste is presented in Chapter 5.

Table 2-2: Hierarchy of Solid Waste Management Options

- REDUCE the amount of solid waste generated
- RECYCLE and COMPOST appropriate components of the waste stream
- COMBUST, with energy recovery, waste that cannot be recycled
- LANDFILL wastes that cannot reasonably be recycled, or combusted

Table 2-3: Profile of Materials Processing Facilities in Massachusetts, 1994

Facility Type	Number of Facilities
Material Recovery Facilities (MRF's)	5
Processors of:	
Bottles and Cans (non-deposit)	50
Paper	73
Plastic	51
Scrap Metal	87
Textiles	10
C&D Debris, Wood Waste	55
Yard Waste Composters	22

The Integrated Solid Waste Management System

The Integrated Solid Waste Management system (ISWM) includes both recycling and composting facilities involved in waste diversion and combustion facilities and landfills providing waste disposal (Table 2-2). Altogether, facilities within the Commonwealth managed approximately 10 mt of waste, including 796,000 tons of waste imported from out-of-state for disposal in Massachusetts facilities (Figure 2-3). Solid waste import and export resulted in a net import of 370,000 tons.

Diversion

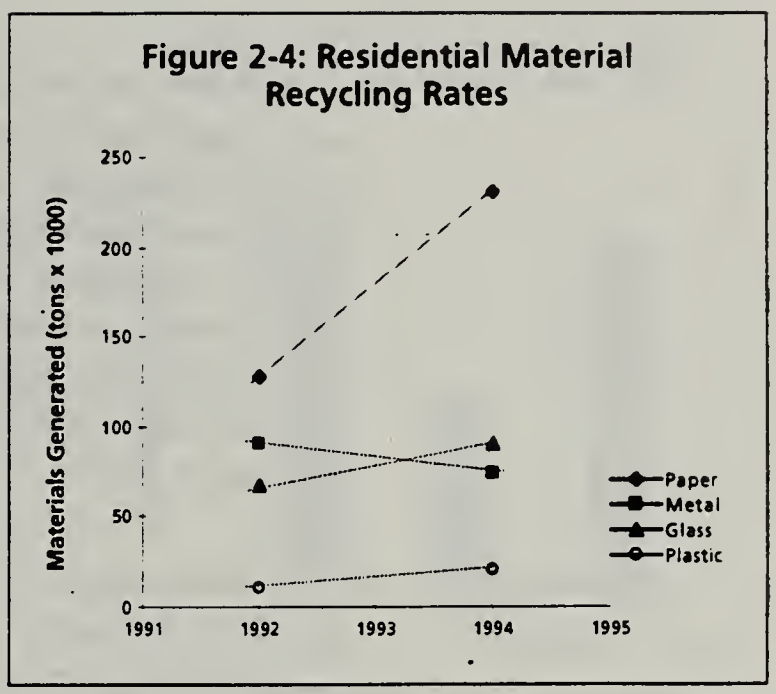
Diversion rates continued to gain significant momentum between 1992 and 1994. Municipal and non-Municipal solid waste diverted from disposal in 1994 equalled 4.06 mt, for a **total system** diversion rate of 42 percent. A total of 2.16 mt of MSW, 31% of MSW generated, was diverted in 1994. This indicates that Massachusetts is clearly on target to meet the Administration's MSW diversion goals of 34% by 1996 and the 46% goal by 2000. The C&D recycling and processing rate was 79 percent. Waste diversion supports the processing facilities listed in Table 2-3.

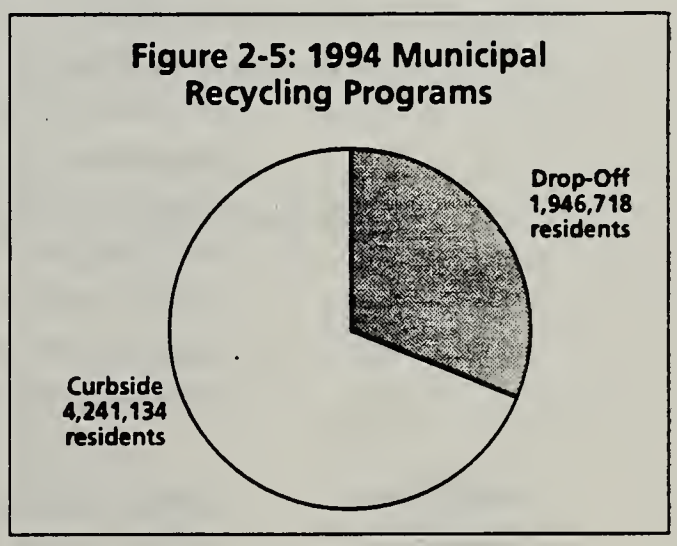
Residential Recycling and Composting

Residential Recycling and Residential Composting consist of all residential waste diverted from disposal to recycling or composting. Residential recyclables are collected either through curbside programs or through collection at recycling drop-off centers or transfer stations. In 1994, 0.42 million tons of residential MSW, primarily metals, paper, plastic, and glass were reportedly recycled state-wide. This represents a 40% increase from the amount recycled in 1992, with the largest increase resulting from paper recycling (Figure 2-4).

Residential composting consists of all residential waste diverted to municipal composting programs. In 1994, 0.44 million tons of material, primarily leaf and yard waste, were diverted. The amount

of waste diverted to home composting is not included in this value, nor is it included in the total waste generation values described above. The Department estimates that as much as 5,500 tons of materials may be diverted to home composting bins.





Municipal officials continue to expand access to recycling and composting for the environmental and economic benefits of waste diversion and to meet new recycling guidelines. The number of cities and towns offering some form of recycling rose from 190 in 1990, to 341 by the end of 1994. During the same time, municipal composting programs increased from 180 to 250. Curbside collection programs jumped from fewer than 20 programs in 1990, to 109 by 1992 and 143 programs in 1994. Curbside programs, considered a more effective way of diverting recyclables, now reach more than two-thirds of the state's population, an increase of 40% over 1992 (Figure 2-5). DEP anticipates that residential recycling and composting rates will get a strong boost during 1995 and 1996 as Boston's city-wide curbside program becomes fully operational and communities such as Lawrence, Saugus, Fall River, Lynn, Brockton, and Rockland initiate curbside programs.

Recycling rate increases are due not only to new programs, but also to increased diversion rates from existing programs. Mandatory municipal recycling ordinances rose from nearly 100 in 1990 to 191 by 1994. Whereas, in 1990, the average recycling program collected only four materials — glass containers, newspaper, steel cans, and white goods — by 1994, a typical recycling program also collected aluminum, plastic and steel containers, corrugated cardboard, and leaves.

Increased access to and participation in recycling programs is stimulating continued growth in the recycling infrastructure as new processing operations come on-line and existing facilities increase their work force to handle greater volume. This is reinforcing the recycling industry's role as an important contributor to the Commonwealth's economic health.

Commercial Recycling and Composting

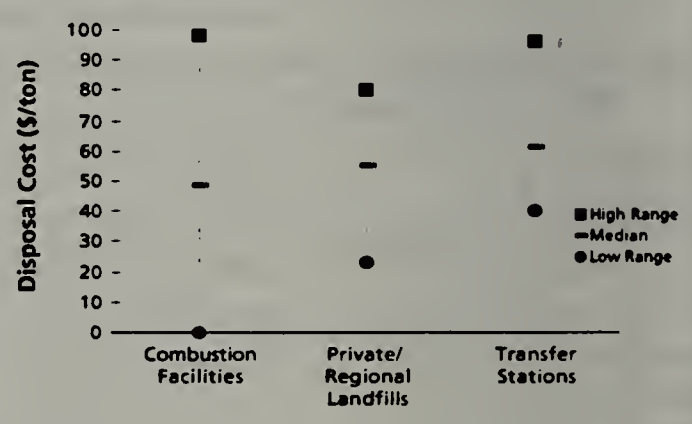
Commercial recycling of MSW comprises the diversion of commercially generated waste paper, office paper, and other commercially generated recyclables. Also included within this category are metals recovered both before and after the combustion of solid waste at combustion facilities. In 1994, commercial recycling of MSW was estimated at 1.07 mt.

Commercial composting involves the diversion of organic wastes generated by or handled by the commercial sector, primarily leaf and yard waste, but also some organic materials generated by industry (gelatin waste for example) or through food processing. Manure and commercial organic wastes are composted at commercial farm composting operations. Though not included in these numbers, agricultural wastes are also often composted on farms. By the close of 1994, there were 62 registered farm composting operations and commercial composting facilities in Massachusetts. A large share of the wastes composted came from non-farm sources: food processors and distributors, and paper manufacturers. In 1994, an estimated 0.23 mt of wastes were composted at commercial facilities.

Non-MSW Recycling

Non-MSW recycled in 1994 was estimated at 1.9 mt of construction and demolition (C&D) debris, of which 0.028 mt was imported from out of state. This represents a processing/recycling rate of 79% for C&D generated within Massachusetts. Most of this consisted of asphalt road pavement and concrete. A small portion, by weight, was wood chipped for mulch or for fuel in industrial furnaces. This non-MSW was processed and recycled by 55 C&D waste processing facilities in the state.

Figure 2-6: 1994 Price Range for Municipal Waste Contracts



Solid Waste Disposal

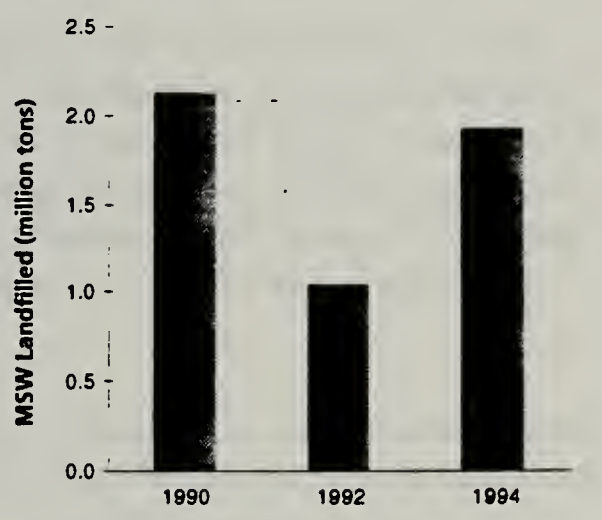
The Commonwealth retains waste disposal as the final management option for solid waste generated within the state. Combustion facilities and landfills are the two options employed in the state for disposing of solid waste and account for 60% of the total waste managed within the state and approximately 70% of MSW managed. Disposal prices have remained relatively stable over the past two years, a marked difference from the major price drop between 1990 and 1992. Municipal contract prices extend over a broad range, depending on when the contract began (Figure 2-6). For example, some communities with long term contracts with SEMASS pay less than $15 per ton, while members of the Northeast Solid Waste Community (NESWC) pay nearly $100 per ton. The average municipal contract price, however, is within the range of the current short-term (spot) market of $45-$60 per ton.

MSW Combustion and Resource Recovery

There are nine solid waste combustion facilities operating in the Commonwealth. A tenth facility has been permitted in Shirley, but has chosen to defer construction. Of the nine in operation, six use mass-burn technology to recapture energy from waste; two process waste into refuse-derived fuel (RDF) before burning to recapture energy; and one, a municipal incinerator, does not attempt to recapture energy. As seen in Table 2-1, solid waste combustion facilities reportedly received 3.34 mt in 1994, the vast majority of which was MSW. This represents an 8% increase over 1992 estimates, due primarily to the addition of the third unit at the SEMASS facility in Rochester. A 1995 survey, conducted by DEP, showed that facilities actually accepted different amounts of waste than projected for 1994, but that the net change for all facilities in the total waste incinerated was small. Half the facilities burned greater than the amount previously

projected, and half burned less (see Appendix G). Management of ash generated by these facilities is discussed in Chapter 5.

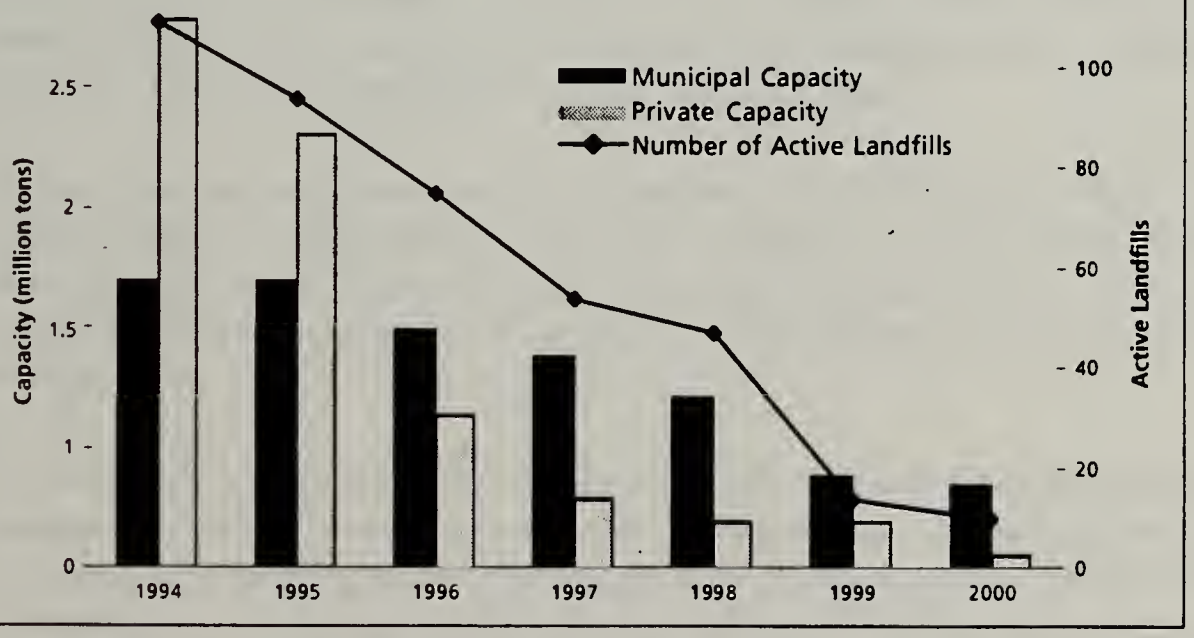
Figure 2-7: Municipal Solid Waste Landfilled in 1990, 1992, and 1994



Landfill Operations

In 1994 the 109 active solid waste landfills in Massachusetts reported 2.68 million tons of solid waste disposed. Landfilled waste included 1.9 mt of MSW, 0.55 mt of C&D waste, 0.09 mt of biosolids co-disposed with MSW, and 0.14 mt of other wastes. Landfill disposal for the years 1990, 1992, and 1994 is presented in Figure 2-7. The high landfill disposal rates in 1994 are thought to be primarily the result of increases in commercial generation as noted earlier, but may also have resulted from the submission of detailed facility reports which categorized waste by type and source. The number of operating landfills and permitted capacity will continue to decrease, as seen in Figure 2-8 for the period 1994-2000 (data on the projections for individual facilities is presented in Appendix F).

Figure 2-8: Number and Capacity of Solid Waste Landfills, 1994-2000



CHAPTER 3
Projections of Need for Solid Waste Disposal Capacity, 1996 – 2000

Introduction

The grants, enforcement, and information described in Chapter One are the key tools for achieving the Commonwealth's goal of recycling 46% of all solid waste. Complementing these initiatives is the Weld/Cellucci Administration's policy of managing disposal capacity and closing old unlined landfills to ensure an adequate supply of recyclables to support the recycling industry in Massachusetts. While Chapter Four discusses the implementation of the policy for managing disposal capacity, this chapter presents projections of solid waste generation and management capacity for the planning period 1996-2000.

The model incorporates the management priorities of waste reduction and waste diversion, followed by combustion, and finally landfilling of the remaining waste. The excess or shortfall in disposal capacity for each year has been calculated so that EOEA and DEP can ensure proper planning for that capacity.

Methods

The capacity needs analysis presented here differs in two significant respects from that presented in the 1994 Update. First, the 1994 Update capacity analysis was limited to MSW. This report estimates the capacity required to handle all solid waste generated in the state, presenting waste generation and diversion figures for both MSW and non-MSW. This total system approach allows DEP to secure for the residents and businesses of the Commonwealth the environmental and economic benefits of waste diversion for both categories of solid waste. Second, this Update estimates disposal capacity need or excess for each year between 1996 and 2000. In the 1990 Plan and 1994 Update, projections were limited to the two benchmark years — 1996 and 2000 — for which the Commonwealth had set its waste diversion targets

Projecting capacity need for the total system required some modifications in the methodology previously used for MSW-only estimates. Table 3-1 summarizes the assumptions made in incorporating non-MSW generation rates and management alternatives. A more detailed explanation of the procedures used to develop the data underlying the projections is presented in Appendix A.

The methodology described in Table 3-2 calculates state-wide need for disposal capacity by first estimating the demand created by in-state solid waste generation, then reduces that demand in accordance with the Plan's source reduction and waste diversion goals for MSW and non-MSW. Following the waste management hierarchy, the balance of MSW requiring disposal is first allocated to combustion capacity, and the remaining MSW and non-MSW then defaults to active landfills. A shortfall represents insufficient landfill space to handle solid waste not diverted or processed by other methods, or returned to be disposed as residue or bypass from recycling and composting operations.

Certain key assumptions used in the analysis deserve note:

- For planning purposes the MSW generation rate will continue to be projected at 6.75 million tons through the year 2000. While the 1994 MSW generation rate was 5% greater than the planning assumption (7.1 mt), the 1992 rate was 5% lower (6.4 mt).

Table 3-1: Assumptions Underlying State-Wide ISWM Capacity Analysis

1. Planning for disposal capacity will be based upon the amount of MSW and non-MSW generated in Massachusetts. For the purpose of projecting capacity need, it is assumed that the state will be neither a net importer nor exporter of solid waste.
2. Residential and commercial MSW generation are predictable; residential MSW generation is a function of community size and commercial MSW generation is a function of business type and employment rates.
3. For capacity planning purposes, the toral residential and commercial MSW generation through the year 2000 equals 6.75 million tons.
4. Non-MSW generation rates are equal to the sum of C&D waste processed and recycled, C&D waste, biosolids, and other non-MSW reported disposed in 1994, less Non-MSW imported in 1994. The levels of biosolids disposed is projected to decline to 0 in the year 2000.
5. Source reduction will offset increases in population and per-capita generation rate of MSW through the year 2000.
6. By the year 2000, of gross MSW generated in the Commonwealth:
   a. Recycling (including composting) will divert 46 % from disposal;
   b. 50% will be processed and burned by combustion facilities;
   c. 4% will be directly landfilled.
7. Diversion rates for MSW projected by the Solid Waste Master Plan will be met:
   a. 1992 - 23%
   b. 1996 - 34%
   c. 2000 - 46%
   Diversion rates in the interim years will reflect a 3% annual increase.
8. Disposal of biosolids will decrease annually to zero by the year 2000 as biosolids are diverted to composting programs, applied to land, or disposed of in sludge-only landfills. Disposal of other non-MSW waste will equal the amount reported disposed in 1994.
9. Diversion rates for C&D will be 85% of C&D generation beginning in 1996.
10. MSW and non-MSW landfills will close when their current approved capacity is exhausted, or as specified in a permit or enforcement order.
11. Existing combustion facilities will operate at full capacity, with on-line availability determined on a facility-by-facility basis.
12. The available capacity of landfills is assumed to be equal to their daily permitted tonnage multiplied by the number of operating days per year, unless otherwise established in a permit, an authorization, or enforcement order. Where capacity is not specified in a permit, authorization, or enforcement order, the available capacity is assumed to be equal to the amount of waste the facility reported disposed in the landfill during 1994.
13. Disposal of non-MSW into MSW landfills (codisposal) is assumed to equal the amount codisposed during 1994 at each facility operating through 1997. Then codisposal will be assumed to be zero.

DEP will continue to track generation levels to determine whether the variations from the planned rate reflect a true change in waste generation patterns or are only attributable to normal statistical error.

- The combined recycling and composting rate for MSW will increase by 3% per year between 1996 and 2000 and the goal of 46% recycling will be achieved.
- The generation rate of non-MSW will decrease slightly each year based on decreased co-disposal of biosolids each year between 1996 and 1999 after which co-disposal is phased out completely. The transition period for disposal of biosolids is linked to the closure of unlined municipal landfills which accept sludge from their waste water treatment facility.

Table 3-2: Determining State-Wide Need for Solid Waste Disposal Capacity

DEP uses the assumptions in Table 3-1 and the methodology outlined below to determine state-wide capacity need for each year in the analysis (1996-2000). Intermediate calculations of MSW-only disposal capacity use the same procedure, considering only facilities that accept MSW.

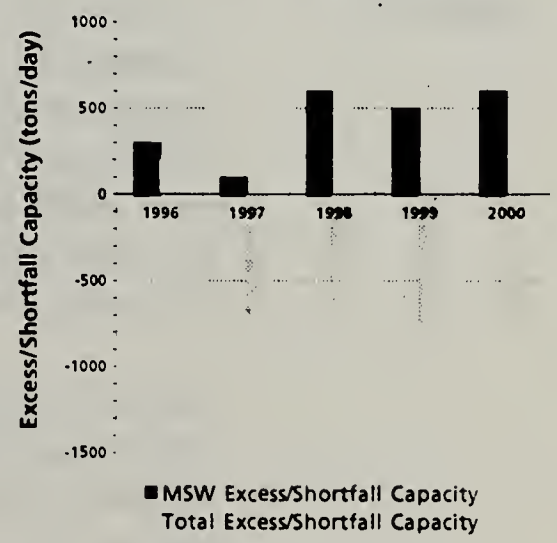
1. Determine total state-wide solid waste generation by adding MSW and non-MSW.
2. Calculate waste requiring disposal by subtracting the total amount of waste diverted (MSW and non-MSW recycled or composted) from total waste generated.
3. Find total disposal capacity by summing capacity of all facilities. (Landfill closure dates and intake rates are given in Appendix F. All combustion facilities are assumed to operate through the planning period, 1996-2000.)
4. Arrive at the excess or shortfall capacity within the ISWM system by subtracting the sum of all disposal capacity (#3) from total waste requiring disposal (#2).

- C&D processing is projected to increase from 80% in 1994 to 85% from 1996-2000 as additional C&D processors come on line.
- Co-disposal of non-MSW, predominantly C&D waste, in MSW landfills will continue through the year 1997 at the same rate as was reported for 1994 for those landfills that remain open. Then co-disposal will be assumed to equal zero.

Projections of Future Disposal Need

Figure 3-1 summarizes the amount of management capacity that will be available from 1996 through 2000 to meet projected MSW generation of 6.75 million tons and projected total solid waste generation of between 9.33 and 9.42 mt. There is sufficient capacity to handle all of the State's municipal solid waste over the next five years and its non-municipal solid waste in 1996. However, starting in 1997 there is projected to be a small shortfall in total system capacity of 700 tons per day which increases in 1998 to 1100 tpd, peaking at 1200 tpd in 1999 before decreasing to 100 tpd in 2000. As discussed in Chapter 4, however, through 1998 it is projected that this shortfall can be absorbed by increasing the disposal rate at existing unlined landfills to facilitate closure and capping, rather than permitting new disposal capacity.

Figure 3-1: MSW and Total Solid Waste Capacity Projection, 1996 - 2000



** assumes 312 operating days per year*

This report's conclusion that there is no need for additional MSW disposal capacity is markedly different from the 1994 Update projection which predicted a shortfall of MSW disposal capacity in the year 2000 of approximately 500,000 tons (1600 tons per day). The explanation is that the 1994 Plan assumed that up to 675,000 tons of non-MSW would be co-disposed in landfills DEP categorized as MSW capacity. Disposal of non-MSW in landfills permitted to accept MSW consumes a portion of the landfill's total permitted capacity for MSW. Reducing MSW capacity by the estimated amount of co-disposal yielded a MSW capacity shortage.

The 1994 Update's co-disposal assumption was developed in the context of planning only for MSW capacity. Since the analysis presented here has been expanded to address the total solid waste management system, both diversion and disposal, the co-disposal assumption has been modified. This Update assumes that facilities permitted to accept both MSW and non-MSW will continue to accept those wastes at the same rate they reported in 1994 through 1997. Then, for planning of future capacity, it will be assumed that no co-disposal will occur. Therefore, the practice of disposing non-MSW into MSW landfills (co-disposal) will decline.

Permitting for Seasonal Changes in Waste Generation

In the past, DEP has received comment that planning for annual disposal capacity may have the unintended consequence of causing a shortage of disposal capacity on a seasonal basis. Seasonal fluctuations in waste generation regularly cause monthly and sometimes quarterly surges in the amount of waste delivered to disposal facilities, often at levels exceeding average daily permit limits. If capacity permitted to meet projected state-wide annual waste generation is fixed at the average daily tonnage, seasonal capacity shortfalls could result. In response to this concern and to ensure that sufficient capacity will be available to handle these seasonal fluctuations, DEP has begun to issue permits with total annual capacity limits that correspond to projected annual need. These permits allow for site-specific conditions that enable facilities to respond to greater than average demand for disposal capacity on a daily basis as long as annual limits are adhered to. This will allow facilities to adequately handle these fluctuations in waste generation without the need to overbuild disposal capacity.

A Reasonable Safety Net

The capacity analysis presented here is based upon sound planning assumptions, nevertheless, it is a projection. A major limitation affecting the ability to plan for adequate, not excess, landfill capacity is the variability between the projected and actual dates when existing landfills will reach their approved capacity and close. Projections based on permitted rates are often at variance with the fill rates at both public and private landfills. It is currently projected that approximately 1.2 mt of landfill capacity will be lost between the period 1996-2000 as unlined landfills are closed and other landfills reach their permitted capacity and close (Figure 2-8). DEP will continue to verify and update site-specific information on an annual basis.

A second important variable affecting capacity need projections is the waste generation rate. The 1992 estimated MSW generation rate of 6.4 million tons created a natural safety margin, since it was less than our planning baseline of 6.75 mt (see Figure 2-2). This report's preliminary estimate that nearly 7.1 mt of MSW was generated in 1994 would eliminate that margin of safety if it continued into 1996. However, the projection of approximately 80,000-100,000 tons of excess MSW capacity in 1996 and 1997 reduces the immediate risk of insufficient capacity (Figure 3-1).

Given the uncertainties inherent in making future projections based upon past data, DEP has developed a plan that will provide a sufficient "safety net" to protect public health and the environment should there be unforeseen changes in either the volume of waste generated or the availability of any component of the ISWM system.

If C&D generation increases beyond projections, C&D waste processors can likely process greater amounts of material since, in many cases, they are not restricted by tonnage limits but

only by the capacity of their processing machinery. If processing cannot be increased to meet demand then the waste will need to be landfilled.

If MSW generation increases beyond projections and the permitted MSW disposal system does not provide enough capacity, DEP has several options:

- increase the MSW tonnage ratio at landfills which DEP has recently permitted with specific tonnage limits for MSW and non-MSW;
- increase the total tonnage limits for operating MSW landfills; or
- amend the permits for non-MSW landfills to allow them to handle MSW consistent with their site assignments.

If necessary, C&D landfill capacity can provide a buffer for MSW disposal capacity since they must meet the same regulatory standards for siting, design of groundwater protection systems, and final covers, monitoring systems, and operations. These options will allow the Commonwealth to act in the short term on its obligation to ensure that adequate disposal capacity exists without imposing the long-term environmental burdens of excess landfill capacity.

Chapter 4
Managing Future Disposal Capacity Requirements

Managing Landfill Applications

The analysis presented in Chapter 3 concludes that there is more than sufficient MSW disposal capacity for the next five years assuming the 1994 Plan's source reduction and waste diversion objectives are met. The current projections for non-MSW capacity conclude there is excess non-MSW capacity for 1996 and only a marginal shortfall of approximately 200,000 tpy in 1997 (700 tons per day). Moreover, the projection of a 1997 shortfall in non-MSW capacity does not account for the potential impact of the Department policy, summarized in the section titled "Moratorium Exception for Municipalities Under Consent Orders to Close Unlined Landfills" in this chapter, under which consent orders may provide for an increase in the disposal rate of non-MSW at unlined landfills to facilitate their closure and capping. For the period 1996-1998, an estimated 200,000-300,000 annual tons of non-MSW capacity may be made available through this policy. This anticipated increase in the use of existing disposal capacity could offset the projected need in 1997-1998 to develop new landfill space for non-MSW.

Based on those capacity projections and DEP's intent to bring its practices in reviewing disposal projects in line with the Commonwealth's goal to eliminate unnecessary dependence on landfills, a moratorium on reviewing applications for landfill disposal projects will commence upon publication of this Update. Except for the exemptions listed in the paragraph below, the moratorium **will** apply to the review or approval of the following applications:

- Site assignments for landfills;
- Permits to construct new disposal capacity or expand existing disposal capacity where the total amount of waste disposed is 50 tpd or more;
- Modifications to create disposal capacity through the reclamation or mining of an existing landfill where the total amount of off-site waste disposed is 50 tpd or more; or
- Permit modifications to increase tonnage limits where the total amount of waste disposed is 50 tpd or more.

The moratorium **will not** apply to the following actions affecting disposal facilities:

- The issuance of a final permit, where a draft or provisional permit or plan approval had been issued prior to the effective date of the moratorium;
- The issuance of authorizations to construct or to operate within areas or phases which have received draft, provisional, or final permits or plan approvals prior to the effective date of the moratorium;
- Approvals to increase the disposal rate of non-MSW pursuant to a consent order for closure and capping of an unlined municipal landfill;
- Expansions in capacity volume or disposal rate at existing facilities which disposed less than 50 tpd of waste;
- Disposal of waste pursuant to compliance and enforcement orders;

- Disposal of waste pursuant to an approval for a demonstration project or full operation of an innovative technology; or
- Actions necessary in response to an imminent threat to the public health, safety, or environment.

At the present time, the moratorium on reviewing applications for projects which create additional MSW disposal capacity is anticipated to continue through 1998. The moratorium for projects which create additional non-MSW disposal capacity is anticipated to continue through 1996.[1] However, the duration and application of the moratorium will be reviewed in the Draft 1996 Master Plan Update, to be released next July, and confirmed in the Final 1996 Update published in the Fall. The 1996 Update will assess MSW capacity availability and disposal prices, in both state-wide and regional markets, the trend in waste generation rates, and the progress in achieving the Commonwealth's waste diversion goals. Should there be significant changes in projections of disposal capacity need, DEP may modify the moratorium timelines using the methodology described in Chapter 3.

It is anticipated that the consent orders for all unlined landfills will be completed within the first six months of 1996. The 1996 Draft Update will then be able to quantify the amount of additional non-MSW capacity made available at these sites. Should, for example, the increased amount of non-MSW expected to go into unlined landfills offset the current Update's projected need for capacity in 1998, the non-MSW moratorium may be extended through 1997.

Background & Legal Authority

This Update follows the statutory directive to "determine [the solid waste facilities] necessary and convenient to the disposal of [Massachusetts] waste in a manner which protects the public health, safety and the environment"[2]. The framework to achieve these objectives is the creation of an integrated solid waste management system defined by a hierarchy of waste management alternatives, which assigns to each alternative an environmentally appropriate share of management responsibility for the Commonwealth's solid waste.

The 1990 Plan capped combustion capacity at 50% of MSW generation, which has now been achieved, and set a course under which recycling and composting (waste diversion) would increase to 46% by the year 2000 while landfilling would decline to 4%.[3] Replacing land disposal with resource recovery and waste diversion is designed to meet DEP's statutory mandates to protect the public health, safety and the environment, promote the balanced use of resources, and encourage recycling.[4]

Manufacturing new products with recyclables reduces the adverse environmental impacts and excess energy consumption associated with the extraction and processing of virgin materials.[5] At the other end of a product's life cycle, waste reduction extends the useful life of existing disposal

1. DEP will make arrangements with applicants to return fees paid in accordance with 310 CMR 4.00 for pending projects affected by the moratorium.
2. M.G.L. c. 16, sec. 21.
3. The Plan also assumed an increasing rate of source reduction to a level of 10% in the year 2000 which would offset increased waste generation associated with projected population growth.
4. See, M.G.L. c. 111, s. 150A; M.G.L. c. 21A, 2(2), (9), (10), (13) and (19).
5. For example, every ton of recycled steel saves 1.5 tons of iron ore and 0.5 tons of coal. The energy saved from annual steel can recycling nationally will annually power 18 million households.

facilities[6] and preserves undeveloped land for more productive uses or as open space.[7] Landfills generate leachate throughout their operating life and decades thereafter. Groundwater protection systems may at worst leak and at best create long term demands for leachate management. Landfills also generate methane and other organic contaminants that may lead to severe nuisance conditions and other air pollution problems. Flocks of sea gulls feeding at landfills also present a significant contamination threat to surface waters. Without increased recycling, landfills will continue to proliferate to the detriment of the Commonwealth's environmental quality and the well being of its residents.

Given that 50% of Massachusetts MSW is managed by combustion facilities, permitting more MSW landfill capacity can only come at the expense of reducing the share of the waste stream diverted to recycling and composting, or increasing waste imports. Both result in negative environmental and resource management impacts. Moreover, the projected availability of existing landfill capacity already exceeds the amount required to dispose the municipal solid waste generated by Massachusetts residents, businesses, and institutions. This excess provides a margin of safety to meet the Commonwealth's objective to be self-sufficient in MSW landfill capacity. A similar margin of safety for non-MSW will be provided through the policy allowing for increased disposal rates at municipal landfills under consent orders for closure and capping.

Building more capacity on top of this excess will preserve the artificial cost advantage disposal has maintained over waste diversion and reinforce the barriers to reaching the Commonwealth's integrated solid waste management goals. Allowing unnecessary MSW landfill development also poses a risk that existing waste-to-energy facilities won't be able to economically replace the waste their contract communities don't deliver because of the growth of waste reduction and diversion programs. Denied the replacement waste necessary to generate sufficient energy and disposal revenue, combustion facilities are likely to enforce "put or pay" contracts against communities forcing them to pay disposal fees for materials diverted into recycling and composting. These combined market impacts of excess landfill capacity can create a powerful disincentive against maintaining or expanding waste reduction and diversion programs.

By creating conditions which reduce the supply of recyclable materials, overbuilding disposal capacity also weakens the viability of those Massachusetts manufacturing and processing industries whose survival and competitive success is linked to expanding local sources of recycled feedstock. Without the increasing market demand created by these industries the economic benefits of recycling to communities and businesses would dissipate, thereby reducing their incentive to maintain or expand participation in recycling programs. The decline in participation would, in turn, stimulate a destructive downward spiral of diminishing supply and demand for recyclables. The long term net effect of supply and demand reductions would be to undermine the recycling infrastructure and buttress a detrimental dependence on disposal solutions to manage our waste.

Sending the Proper Message of No Need for New Capacity

In the late 1980's, DEP was faced with the prospect of reviewing multiple proposals to construct waste-to-energy facilities at various locations across the state. Rather than continue to stimulate

6. See, M.G.L. c. 111, s. 150A.
7. M.G.L. c. 21A, sec. 2(9) and (10).

additional proposals and expend public and private resources by reviewing each project separately, DEP chose to implement a moratorium by announcing that it would not act on combustion facility projects. The moratorium served to communicate an unequivocal message that the Commonwealth did not view continued unlimited expansion of combustion capacity as the appropriate path to achieve an integrated solid waste management system. Although the moratorium was not popular with project proponents when announced, ultimately it served to conserve the time and money which would have been invested in the unsuccessful pursuit of individual permits.

An analogous situation has now arisen in connection with landfill proposals for the disposal of MSW. Despite the consistent reaffirmation of the Commonwealth's integrated solid waste management goals for the year 2000 — recycle 46% of all solid waste, eliminate disposal of unprocessed MSW, and reduce landfill capacity to 4% — the MEPA office and DEP continue to be presented with applications from public and private developers to build new MSW landfills or to create new capacity at existing landfills through expansions or reclamation.

These proposals have persisted despite a declaration in the 1994 Update that DEP would not permit additional MSW disposal capacity in the near term and the confirmation in the 1995 Draft Update's projection of substantial excess MSW disposal capacity through the year 2000. Allowing projects to move through MEPA, site assignment, and preliminary permit reviews have apparently communicated to the landfill development community the false impression that DEP continues to be receptive to MSW landfill projects. A fundamental purpose of the moratorium is to correct that misperception and the inconsistent message it conveys.

Leaving open the procedural avenues to apply for a landfill expansion also sends mixed signals to municipal officials responsible for waste management and financial planning. The Master Plan Updates were intended to put local officials on notice to reduce their community's dependence on MSW landfilling. The "green lights" from MEPA certifications and DEP site assignment and administrative completeness approvals, however, appear to have created the expectation that their current disposal options will continue to be indefinitely available. Disposal contracts are renegotiated among municipalities, transporters and facility operators, particularly in communities that are host to private landfills, on the false assumption that expansion permits will ultimately be approved by DEP.

A similar scenario is occurring in municipalities with unlined landfills. Landfill reclamation/mining is in many situations being pursued as a vehicle to perpetuate cheap disposal costs and generate host community fee revenue through substantial tonnage increases; not as an innovative approach to reduce closure costs by reducing the landfill's footprint. In the same vein, cities and towns "hosting" commercial landfills contract with the facility operators to obtain revenues and below market rate tip fees. These contract benefits are incorporated into the municipality's budget removing any incentive to make the transition to develop alternative funding sources.

Compounding this pattern, the false expectation of future expansion permits means that realistic waste management alternatives are not investigated while municipal budgets are approved and allocated, and financial commitments for design and construction are incurred. This moratorium

will provide advance notice to municipalities to head off the inevitable budget dislocations and financial losses which will occur when expansion permits are later denied based on the absence of need for MSW capacity.

Moratorium Exception for Municipalities Under Consen. Orders to Close Unlined Landfills

As a part of this Update, DEP has issued a policy (Policy on Approving Tonnage Increases to Facilitate Unlined Municipal Landfill Closures, BWP-022) under which a community negotiating a consent order to close and cap its unlined landfill may request an increase in the disposal of non-MSW for a limited period of time (See Appendix L for full policy). The policy is designed to facilitate the accelerated capping of these sites by providing fill-type materials to achieve the slopes and grades necessary to construct an effective impermeable cap, and additional waste to generate dedicated revenue to offset capping costs.

Approximately 200,000 tpy of waste is now being disposed in the 20 landfills which are likely to be eligible to accept additional non-MSW under the policy. The extent of the disposal increase that may occur through consent order negotiations won't be known for approximately six months. However, it is currently estimated that a minimum of 200,000-300,000 tons of disposal could be added to the non-MSW system each year through 1998.

Although the total volume of disposal capacity approved through consent orders may exceed the Update's projection for the amount needed to manage this waste stream, the long term environmental benefits achieved by closing these sites exceeds the short term risks excess capacity might cause the non-MSW recycling market. In addition, disposal of non-MSW has lesser adverse environmental consequences than MSW, e.g. the problems associated with landfill gas generation and vectors such as sea gulls. Moreover, the policy only allows for an increase in the rate of disposal. It does not allow for creating additional disposal capacity through vertical or lateral expansions. For these reasons, the moratorium will not be applied to tonnage increases approved in accordance with the policy.

Criteria and Process for Allocating Disposal Capacity Among Competing Landfill Projects

Consistent with its statutory authority cited above, regulations were adopted under which DEP imposed limits on the amount of disposal capacity it would permit (310 CMR 19.038(a)11-13). Under these procedures, when a final permit is issued, the total state-wide need for disposal capacity is reduced by the number of tons of disposal allowed under the permit. Thus, the sequence of final permit approvals now determines the allocation of state-wide disposal capacity among pending site assignment and permit applicants. Moreover, the merits of each application are evaluated independent of other proposals under review.

Competitive Review of Landfill Proposals

Allocating disposal capacity through consecutive permit decisions does not allow the need for limited disposal capacity to be apportioned to those projects that best contribute to the State's integrated solid waste management goals, and does not allow evaluation of which projects will likely create the least damage to the State's overall environmental quality. Project proponents have also expressed dissatisfaction with the consecutive permit method because it lacks predictability. Under the present system, as the need for additional capacity is reduced with each final permit, applicants' time and money are put at risk in the race to get a permit with sufficient capacity before it is awarded to a preceding project.

The shortcomings of the present system can only be corrected through substantial changes in the process and criteria used to allocate landfill disposal capacity. The initiative to modify the consecutive permit process was first made public in the 1994 Solid Waste Master Plan Update. It offered a proposal developed by a subcommittee of DEP's Solid Waste Advisory Committee. Composed of representatives from the solid waste industry, municipalities, environmental organizations, and other solid waste professionals, the group devised an approach in which DEP would conduct a competitive process, somewhat analogous to a Request for Proposals (RFP), to select disposal projects to meet projected state-wide need for disposal capacity.

Under this process, DEP would regularly evaluate the need for disposal capacity and then, if necessary, conduct an open competition among solid waste facility developers with projects that meet the projected capacity need. The winning project(s) would receive allocation of disposal capacity conditioned on their securing a final permit. Although the 1994 Update acknowledged that the RFP proposal had great potential to improve predictability for project proponents and promote innovative and environmentally sound solutions, DEP decided to defer adoption of this recommendation pending further study. One basis for the deferral was the lack of publicly reviewed criteria by which DEP would distinguish superior projects among competing proposals.

Overview of Selection Criteria

The site assignment and permit criteria in the solid waste rules were developed and are applied to ensure that a facility will be located, designed, constructed, and operated in a manner which protects the health and safety of the public and the environment. These baseline standards do not, however, distinguish which proposals will, in both the short and long term, minimize environmental costs and optimize land use. Thus, there is the need for a method to determine among projects competing for progressively less landfill capacity which ones will most effectively contribute to the State's integrated solid waste management objectives while posing the least environmental impact.

The following general criteria are proposed to provide such standards:

- The amount of additional land consumed by the project;
- The extent to which the project promotes integrated solid waste management objectives; and
- The impact of the project on the environmental quality of the site and the surrounding area.

Landfills play an essential role in the waste management system as an option of last resort. An important advantage of their design character, as compared to combustion facilities, is their flexibility in handling a wide and variable range of types and volumes of waste. While certainly necessary in the absence of preferable alternatives, burying waste is one of the most degrading and least productive uses of land. Although modern liner systems divert polluting leachate from the underlying ground water, the area dedicated to waste disposal is despoiled, and the land abutting the site is often devalued. Innovative post-closure uses have reclaimed some landfills for productive uses, but in most cases the disposal of large volumes of trash makes the site unusable for decades after closure. Given these consequences, projects with demonstrated ability to improve the environmental quality of an existing site should receive top-priority consideration,

and disposal projects that do not consume open space in creating new capacity should be preferred over projects that do.

Hierarchy for Ranking Landfill Development Alternatives

Figure 4-1 and the text below describe DEP's preferred model for incorporating a landfill hierarchy into a comparative site selection process.

The landfill alternatives listed below are set out in preferential order, based on preliminary considerations of land-use requirements and overall impact on environmental quality.

- Vertical expansion of an existing landfill beyond its currently permitted height.
- Lateral expansions of an existing landfill beyond its currently permitted footprint or new landfills (greenfields) within a previously site assigned area.
- Lateral expansion of an existing landfill or new landfills (greenfields) within an area not yet site assigned.

Expansions within Previously Site Assigned Areas

Vertical expansions should generally be preferred over lateral expansions, because the former conserves land use and contains the waste within the existing disposal footprint. An affirmative site assignment decision by DEP and the local Board of Health establishes that the location meets minimum health and environmental standards. Since virtually all landfills are located in areas which have either been zoned for industrial use or receive special land use permits, the site assignment also incorporates a decision by the local authorities that the proposed facility is compatible with the municipality's overall land use plan.

Greenfields or Expansions into Unassigned Areas

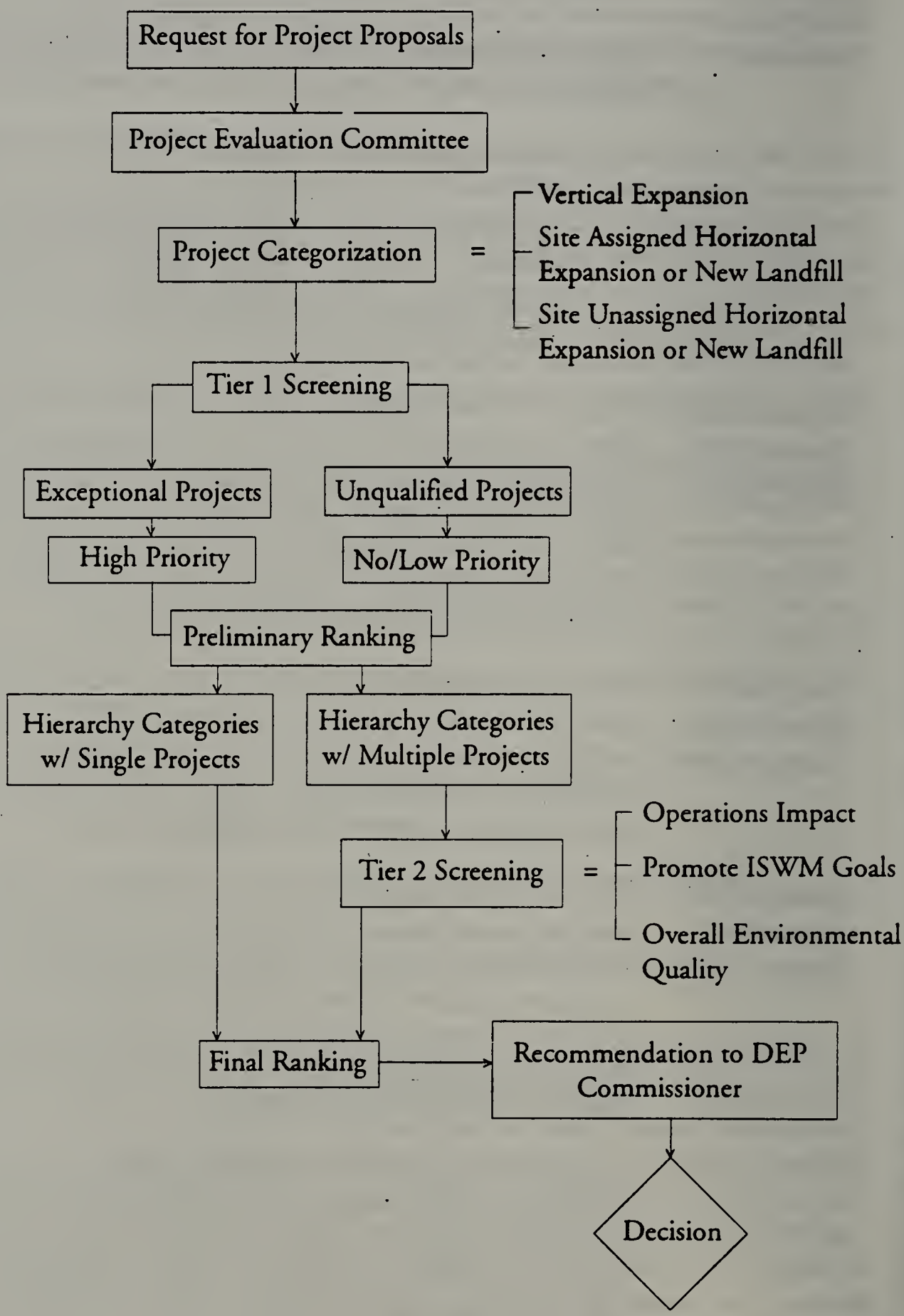
The least preferred option is to create new disposal capacity by means of a greenfield landfill or a lateral expansion into a previously unassigned area. While it may be argued that lateral expansions could be preferred over greenfields because waste disposal is already present in the immediate vicinity of the expansion project, it is DEP's opinion that such an assumption is not warranted, given the unique conditions found at different sites.

Innovative and Alternative Options

The Draft Update proposed a selection process which initially categorized proposals based on their likely overall impact on the disposal site. The potential benefits of a successful landfill mining/reclamation project, including no additional land use, site remediation, consolidation of the disposal footprint and reduced closure costs, led to designating landfill mining as the top preference. However, in retrospect, it is far more appropriate for the State to recognize and support all types of beneficial innovations and alternatives. The State should not be in the business of picking "technology winners."

Although the potential benefits of landfill mining are worth testing, the technology's viability has not been sufficiently demonstrated to rely on it as an essential means of meeting the Commonwealth's future disposal capacity needs. During the course of the moratorium, DEP will have the opportunity to continue to evaluate the environmental impacts and economic considerations affecting the projects in Newbury and Fairhaven as a basis to determine landfill mining's future role in providing necessary disposal capacity.

Figure 4-1: Disposal Capacity Allocation Criteria and Process



DEP is aware that several municipalities operating unlined landfills are actively considering landfill mining projects premised on Fairhaven's financing model. The Fairhaven demonstration project requires operating a regional MSW landfill for a decade or more to finance closure and to provide a full-scale demonstration of the mining and closure process. In terms of broader application, the potential site-specific benefits of landfill mining do not at this point in time appear to offset the negative state-wide consequences of creating substantially more MSW disposal capacity than required to meet the Commonwealth's need. Thus, landfill mining projects will be subject to the MSW moratorium.

Landfill mining proposals will also not be considered under the 1996 competitive selection process for non-MSW projects commencing operation in 1998. Mining projects which propose to accept only non-MSW, in addition to exhumed processed waste, may be reviewed on a separate site-specific basis to determine if the proposal will result in an effective remedial action and facilitate capping the site.

Comparative Screening Criteria

Tier 1 Screening

Categorizing a site based only on its land consumption characteristics may ignore other fundamental aspects of a project. Therefore, a preliminary ("Tier 1") screening will be conducted to consider two other aspects of the project. Its primary purpose is to screen out projects that would be considered ineligible or inappropriate in the final selection process. Each project would proceed through a Tier 1 review to ensure that it is not a threat to public health and safety and the environment, advances state-wide integrated solid waste management goals, and can be operating in time to meet the anticipated capacity need. Tier 1 criteria should include:

- Compliance with setback criteria in site assignment and permit regulations.
- Status of compliance with DEP and other health and environmental regulations.
- Conformance with local zoning, site assignment or similar land use restrictions.
- Indices of project feasibility such as financial status and construction timelines.
- Exceptional regional impacts

On this final criteria, concern was expressed by several commentors about the potential for severe disruption of regional or local waste management systems if only state-wide need was considered in establishing disposal capacity limits. DEP has reviewed the rationale expressed in the 1994 Update for abandoning the so called "service area" or regional analysis, and reaffirms the basis for that decision. In addition to the difficulties defining and quantifying a regional wasteshed as described in the 1994 Update, subsequent analysis has also demonstrated that extending hauling distances from 25 to 100 miles for a typical disposal facility has a negligible impact on air quality attainment standards.

The Advisory Committee which recommended eliminating the regional analysis did, however, suggest that DEP remain open to considering unique local circumstances which might justify an exception to the state-wide capacity limit. In the 1994 Update, DEP adopted that recommendation but limited the exception to applications from individual municipalities. Based on the comments received on the Draft Update, DEP will remove that restriction and allow any project proponent to request that exceptional hardship will occur within their service area if their application is rejected based on state-wide need limits. The applicant will be required to submit clear and convincing documentation on the source, extent and duration of the hardship to have the application for a state wide need exception considered.

Secondarily, Tier I screening would identify early in the process projects that could make an exceptional contribution to state-wide waste management goals or address a unique local or regional waste management problem. For example, projects could be evaluated on the extent to which the waste received at the site is recycled or consists of residue from off site recycling. This would allow project enhancements to elevate a proposal above its tentative ranking based on the hierarchy categories alone. The criteria described in the Tier 2 screening process could also serve as the standards that would qualify or elevate lower-ranked projects.

Tier 2 Screening

Tier 2 criteria would provide an objective basis to choose between competing projects within the same preliminary criteria category. There are currently several projects in the environmental review process at the same level within the hierarchy classification (Table 4-1). Tier 2 screening criteria are required to differentiate among competing proposals within a single hierarchy category.

After Tier 1 screening produced a preliminary ranking, disposal capacity need would be matched against the capacity proposed by each of the qualifying projects. If there were only one project in each category, disposal capacity allocations would be based upon the primary criteria ranking,

Table 4-1: Proposed Disposal Facility Projects

Facility	Project Type	Tons/day (*non-MSW)	Tons/year (x1,000)	Capacity (years)
1. Barre	LE, unassigned	300	93.6	8.5
2. Clinton	GF, unassigned	300*	93.6	>10
3. Cohasset Heights	LE, unassigned	500	156	4.4
4. Granby	LE, assigned	400	124.8	
5. Pittsfield RRF	Boiler expansion	120*	42.7	>20
6. Plainville - Parcel "F"	LE, assigned	2,500	715	1.1
7. Plainville - Vertical	VE, assigned	2,500	715	0.5
8. Plainville - East Slope	LE, unassigned	2,500	715	1
9 . Plainville - Wrentham	LE, unassigned	2,500	715	2.1
10. Southbridge	tonnage increase	379	118.25	2
11. Southbridge	LE, assigned	379	118.25	
12. Taunton	LE, assigned	385	120	>10

LE = lateral expansion - landfill; VE = vertical expansion - landfill;
GF = greenfields (new landfill); RRF = Resource Recovery Facility

with no further screening required. However, in order to meet projected need, if a choice between projects within a category were necessary, Tier 2 screening criteria would be applied in reaching final recommendations.

There are three basic components that would be evaluated by Tier 2 criteria: immediate site impacts, promotion of integrated solid waste management goals, and overall impact on environmental quality. Projects would be compared across all three components to provide a comprehensive review of each.

The immediate site impact screen would consider the relative operational impact of the proposals, including:

- The relative size, total volume, life span and transportation (hauling distances) impacts of each project;
- Specific adverse health or environmental risks which would continue or increase as a result of a new or expanded operation;
- The operator's history of compliance with DEP regulations; and
- The impact of the operation on abutting land uses

A second factor in considering relative merit is the facility's anticipated contribution to state-wide or regional integrated solid waste management goals, for example:

- Providing significant on-site recycling, composting or processing activities;
- Providing economic incentives to increase source reduction or waste diversion;
- Producing energy through landfill gas recovery;
- Contributing to the accelerated closure and capping of unlined municipal landfills;
- Contributing to specific regional or state-wide management solutions for problem waste streams.

The third Tier 2 evaluation would prioritize projects based upon potential impact on overall environmental quality. The purpose of this comparative screening is selection of projects least likely to adversely affect or interfere with the surrounding environment. These objectives would be measured by the facility's distance from designated natural resources and population locations.

The screening process would be enhanced by designating significant resources and locations already in the data fields maintained in the Commonwealth's computerized mapping tool, the Geographic Information System (GIS). GIS data fields include:

- Surface Water Bodies (Reservoirs, Lakes, Ponds & Streams)
- Protected Recreational Open Space
- Areas of Critical Environmental Concern
- Natural Heritage Program-Priority Habitat

- Natural Heritage Rare Wetlands and Wildlife
- Airports
- Census Data

Regulations for Conducting the Capacity Allocation Process

The capacity allocation process will be governed by revised site assignment and permit regulations which DEP intends to adopt within 90 days from the release of the Final Update. The revision will include the following provisions:

- The process and criteria described above for competitive review of disposal capacity projects now pending before DEP or which may be initiated through a MEPA filing.[8]
- A Project Evaluation Committee representing the Commissioners of each of the relevant agencies within the Secretariat. The Committee will have the responsibility to evaluate competing proposals and make recommendations to the Secretary and the Commissioner of DEP. The Committee may choose to add additional public or private participants as it deems appropriate. The Committee will provide expertise on natural resource protection issues outside DEP's traditional regulatory authority. It will also address possible concerns about DEP's objectivity if it was solely responsible for both project selection and final permitting.
- Revising the tonnage threshold which subjects projects to regulatory criteria addressing restrictions on disposal capacity development. Application of the needs analysis will no longer be linked to the MEPA determinations. Any facility which disposes of 50 or more tons per day will be governed by the limits on capacity development and the process to allocate capacity among competing projects.

Implementing the Selection Decision

Limiting the moratorium on reviewing site assignment and permit applications to the end of 1996 for non-MSW projects is based upon the current assumption that non-MSW disposal capacity will be required in 1998.[9] This would allow application review and approval, as well as facility construction, to occur in 1997. The competitive selection process will be implemented to choose the project(s) which will procede to final permit review and approval. Therefore, consistent with the 1997 permit timeline, the selection process will commence in 1996 immediately after promulgation of the revised regulations. In accordance with procedures to be detailed in the regulations, all project proponents who request that their facility be reviewed under the competitive process to meet future non-MSW disposal capacity need will be evaluated.

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8. In addition to the criteria detailed in the text, DEP will also review the preference criteria in the current site assignment regulations. M.G.L. c. 111, s. 150 1/2(16) and (17) provided for DEP to consider a preference for new solid waste facilities to be established in municipalities that do not have existing solid waste facilities or are not participating in a regional refuse district. The relevant provision of the site assignment regulations [310 CMR 16.40 (i)] obligates DEP and the Board of Health to consider that preference, but it also allows the agencies to weigh that preference against three factors: (a) the extent to which the new facility will serve the host community's or the region's needs; (b) the extent of recycling, composting, and waste diversion at the facility; and (c) if the proposed facility accepts waste from outside the host community and is larger than 300 tpd, the cumulative impacts of the new and the existing facility on public health and the environment.

9. As noted earlier, should the 1996 Update analysis conclude that new non-MSW disposal capacity is not required until 1998, the moratorium would be extended and the selected facility would defer operating until 1999.

Once a conclusive designation of the superior project is made, there would be mutual commitments between the environmental agencies and the proponent. EOEA and DEP would commit to reserve a predetermined amount of solid waste capacity to be allocated to that facility, provided the applicant secures all necessary federal, state, and local approvals and the facility remains in compliance with applicable laws and regulations. In addition to full regulatory compliance, the applicant would be obligated to demonstrate that it will be feasible to have the project operating when the capacity is needed. These two requirements would be ensured through a conditional commitment that the project would retain its tonnage allocation provided it met mutually agreed upon regulatory and financing milestones necessary to substantiate the project's continuing viability.

Once a selection is made, state agency review of other project applications will be suspended. These applications may be reinstated in the event the selected superior site is unable to meet its commitments. Where there is a question regarding the viability of the designated project, a backup project may be allowed to proceed through preliminary environmental reviews at the discretion of the project proponent.

Chapter 5
Difficult to Manage Wastes

This chapter provides an update on the progress made in addressing Difficult-to-Manage Wastes, (DTMW) — materials that present special handling, disposal and/or public health problems. Many of these waste types can be recycled or beneficially reused, thereby diverting increasing amounts of material from disposal. Each material presents its own set of challenges and must be addressed individually. A waste-specific management plan will be developed in FY96, focusing on finding alternatives to disposal for individual components of this waste stream.

Construction and Demolition Debris

Construction and demolition (C&D) waste is significant for both its large share of the solid waste stream and the small amount of such hazardous materials as asbestos, creosote, lead, arsenic, chromium, and formaldehyde it contains. Definitions of C&D waste are sometimes difficult and vary considerably from state to state. Massachusetts defines C&D waste as debris generated from construction, renovation, repair, and demolition of roads, bridges and buildings. It includes wood, steel, concrete, masonry, plaster, metal, and asphalt. Not included is wood from land-clearing: stumps, logs, brush, soil, and rock from excavations.

The generation rate of C&D waste varies over time and location, making determination of generation rates very challenging. Demographics, the strength of the economy, storms and natural disasters, and certain large-scale construction projects can all affect C&D generation rates in any particular year. In 1990, DEP estimated C&D waste generation at 3.4 million tons, but with a slowed economy DEP reduced that estimate to 2.4 million tons for 1992.

Based on recent improvements in data collection methods, including the standardizing of annual landfill reports to require the quantity of C&D waste disposed, and extensive surveying of C&D waste processors, the 1994 estimate has remained at 2.4 million tons. Landfill operators reported that nearly 540,000 tons were landfilled, primarily in large commercial facilities. Between June and October of 1994, DEP surveyed firms processing C&D wastes. Results indicate that 1.9 million tons were processed for recycling in 1993, a small amount of which was imported from out of state. Processors also indicated general stability in the business climate from 1993 to 1994 (Table 5-1).

Table 5-1: Recycling and Processing of Construction & Demolition Waste, 1994

Material	Tons Processed	% of Total	# of Firms
Asphalt	981,045	51.6	27
Concrete/Brick	780,840	41.0	33
Scrap .Metal	32,521	1.7	24
Demo. Wood	108,791	5.7	7
TOTALS	1,903,197	100.0	

C&D wastes have a number of beneficial uses, e.g. crushing asphalt and concrete/brick separately or in combination with virgin materials to produce recycled asphalt paving (RAP); process gravel, roadbase, and solid fill. Chipping and grinding wood treated with preservatives produces boiler fuel, a bulking agent for sludge composting, wood fiber, and erosion control for landfills. Untreated wood can be chipped for landscape mulch. DEP's support for C&D recycling serves the integrated solid waste management goals of saving landfill space, providing alternatives for disposal, and conserving natural resources.

DEP encourages processing of asphalt, brick and concrete (ABC) by exempting asphalt batching plants that accept ABC from the Solid Waste Site Assignment Regulations (310 CMR 16.05) and permitting. Other facilities that accept ABC are exempt from the regulations under certain conditions. ABC operations must be located at an active quarry or sand and gravel pit where ABC rubble is pre-sorted, or at a demolition-construction project where all ABC generated is processed on site. C&D must be processed to six inches or less in length, all rebar removed, recycled or disposed at an approved facility, and there can be no speculative accumulation of rubble or rebar prior to or after crushing. Even operations that do not qualify for either a categorical or conditional exemption from site assignment may, through the Determination of Need (DON) for site assignment process, be deemed not to require site assignment. DEP also issues Beneficial Use Determinations (BUDs) for one-time projects utilizing C&D material on site.

To further develop markets for processed C&D materials, DEP has been working with the Massachusetts Highway Department (MHD) and other state agencies. Using the Clean Environment Fund, DEP and EOEA provided MHD with a $50,000 grant for a study to prioritize recycled products and materials for immediate use in highway projects, and to identify products and materials to be studied over a longer term for future use.

DEP and EOEA also sponsored workshops through the University of Massachusetts during FY95 for municipal public works officials on using recycled materials in highway construction. The workshops targeted municipal officials and private construction contractors. Furthermore, the new edition of DEP's Recycling Services Directory includes surveyed C&D processors to help contractors and other C&D generators find processing outlets.

Although DEP recently undertook market development efforts and enhanced its data collection methods, there is still room for improvement. The agency is developing better tools for estimating C&D generation and is continuing to work with MHD, other state agencies, and the private sector to further encourage C&D re-use.

Biosolids

Biosolids (sludge) are the residual wastes from wastewater treatment plants (WWTP). Although biosolids are not defined as solid waste in Massachusetts, many communities have traditionally co-disposed biosolids with MSW in MSW landfills. In 1990, 56 communities co-disposed biosolids with solid waste. Based on a 1995 survey, only 24 of those communities continue to do so at a rate of 19,311 dry tons per year. While many communities are now disposing of their biosolids at designated sludge landfills or incinerators located both in-state and out-of-state, a few are now composting their own biosolids. The state is actively encouraging more composting of this potentially useful by-product.

Legislation recently introduced by Governor Weld proposes to formally adopt the term "biosolids" as "a nutrient-rich organic recycled material resulting from the treatment of wastewater, and which meets applicable federal and state health, safety and environmental standards." This wastewater byproduct can be used in a variety of beneficial applications including agriculture, silviculture, gardening, and landscaping, and can be composted with other organic materials.

Sewage from the 45 towns within the Massachusetts Water Resources Authority (MWRA) district is heat dried into biosolids pellets and marketed as fertilizer under the name "Bay State Organic." On September 8, 1993, the Commonwealth and the MWRA entered into a Memorandum of Agreement to promote the use of "Bay State Organic" on state owned lands to provide a market for biosolids, and to educate the public about the beneficial uses of biosolids. EOEA and the MWRA have been very active in promoting the use of biosolids as an excellent natural organic fertilizer. EOEA is working in cooperation with the Department of Environmental Management (DEM), the Metropolitan District Commission (MDC), the Bureau of State Office Buildings (BSOB), and the MWRA to apply biosolids on state owned lands throughout the Commonwealth. Over 30 tons of biosolids have been applied at state parks and properties in the past two years (see Appendix M). Signs identifying the fertilizer as "Bay State Organic" are placed on fertilized areas as an educational tool. In addition, EOEA and the MWRA are planning a media event at a high profile site to further publicize the use of biosolids.

Twelve of the 24 communities currently co-disposing biosolids do so in unlined landfills which DEP has classified as posing either a significant or potential threat to the environment and public health. As these unlined landfills are closed over the next several years, these municipalities will need to reassess their biosolids disposal options. DEP is working with these towns to develop alternatives to co-disposal which will be in place by the time these communities close their landfills. Currently, due to the restriction in available landfill space, combined with the promotion of beneficial uses, the preferred alternatives to co-disposal are to apply biosolids as fertilizer or to use as an ingredient in composting. It is the goal of the state to phase out co-disposal of biosolids with solid waste entirely by the year 2000.

DEP will promote co-composting of biosolids with the organic portion of MSW. To encourage the development of co-composting capacity, DEP plans to promulgate rules for facility design and operation during FY96, followed by compost end-use rules in FY97. These sets of regulations, written to set clear performance, design, operation, marketing, and end-use standards, will ensure protection of public health while building confidence among private investors and public officials involved in developing co-composting facilities.

Hazardous Household Products

Hazardous household products (HHP) exhibit many different properties and pose various potential risks to public health, safety, and the environment. Massachusetts has made significant strides in the last year toward providing for better management of hazardous household products particularly used oil, oil filters, antifreeze, car batteries, surplus paint, and household batteries.

Consistent with the purpose of the Clean Environment Fund, EOEA and DEP have begun new programs to encourage cost-effective source reduction, toxics use reduction, recycling, and reuse of specific hazardous household products. These projects are being coordinated with other EOEA and DEP efforts to reduce the toxicity of municipal solid waste, such as battery legislation and policy revision, development and support for battery collection programs, and waste oil legislation and collection programs. EOEA and DEP are developing a long-range plan for the management of HHP which will build upon earlier work by EOEA, DEP, and recommendations from the Hazardous Waste Advisory Committee (HWAC) made in 1991. The basic strategy for managing HHP will focus on addressing priority materials such as paint, used oil, oil filters, antifreeze, and

car and certain household batteries; prioritizing management of remaining HHP; and outreach and technical assistance.

Over the past two years, the Weld/Cellucci Administration has expanded its focus on the management of solid waste to also include its toxicity. Heavy metals, such as mercury, cadmium, and lead in waste products, are a health and environmental concern for Massachusetts citizens and solid waste disposal facility operators. DEP has targeted a variety of HHPs that it wants to see collected prior to disposal in a landfill or combustion facility. Batteries are at the top of this list.

Batteries

There are two main battery types: Primary Batteries, which are non-rechargeable (disposable), and Secondary Batteries, which are rechargeable. Each of these battery types is further broken down by chemistry (e.g., mercuric oxide, alkaline manganese) and by use (e.g., industrial, button cells, cylindricals). This breakdown emphasizes EOEA and DEP's view that each battery type requires a different management strategy. Lead acid batteries are already banned from disposal under 310 CMR 19.0173 as of December 30, 1990.

Batteries represent a significant source of mercury, cadmium, and lead. In response to the recent focus on mercury accumulation in fresh water fish in Massachusetts and the Northeast, and increasing concern for the potential for adverse health and environmental impacts from mercury emissions from MSW disposal facilities, DEP has just released two draft mercury reports for review. These reports identify batteries as one of the major sources of mercury emissions in Massachusetts.

The Administration is keenly interested in seeing that a comprehensive, aggressive, and workable battery bill is passed this legislative session. Passage of such legislation would remove Massachusetts' dubious distinction as the only New England state without battery legislation. In March 1995, EOEA presented written testimony to the National Resources Committee presenting its position on battery legislation and has worked with legislators to develop a workable battery bill. The Administration favors a pollution prevention approach whereby batteries are made without mercury as the most cost-effective measure to reduce the amount of mercury entering the environment from MSW disposal facilities, banning the sale of certain types of batteries that cannot be produced without mercury, and development of battery collection programs for rechargable batteries and button cell batteries which continue to contain significant concentrations of heavy metals.

DEP, in conjunction with EOEA, has also issued a major policy (Regulatory Status of Used Batteries, BWP-95-005) that will allow batteries testing as hazardous waste to be more easily and cost effectively collected and recycled from commercial and institutional establishments, as well as households. This regulatory streamlining approach will ensure greater environmental protection by making it easier and more cost-effective to collect batteries prior to disposal, while at the same time reducing regulatory oversight. This policy has had an immediate, positive effect, allowing the Rechargable Battery Recycling Corportation (RBRC) to begin its program for collection of rechargable NiCad batteries from retail outlets in Massachusetts. In addition, several of the solid waste combustion facilities in the state have begun collection programs for button cell batteries. The policy, however, is only a complement to the passage of battery legislation. Legislation

is still needed to ensure that battery manufacturers collect those batteries that still require the use of mercury or cadmium for the safe and effective use of the battery, and that manufacturers adhere to sales bans and/or mercury limits on other battery types. The battery manufacturers have been successful in significantly reducing the amount of mercury used in many types of batteries over the past five years, and have made aggressive voluntary proposals for the collection of specific battery types. Additional efforts, however, will be needed to ensure a comprehensive program to reduce the amount of heavy metals entering the waste stream from batteries. Appendix K presents information about battery policy in other northeastern states, two bills that are under consideration by the Legislature, and the state's position regarding battery legislation.

Used Oil and Surplus Paint

In FY95, EOEA and DEP initiated a program to divert from disposal the two most important materials (by weight) collected in household hazardous waste programs: paint and used motor oil. This program took the form of municipal equipment grants for used oil collection tanks and paint collection cabinets and sheds to assist communities in establishing targeted collection programs that encourage reuse and recycling. Grants are awarded based on a municipality's ability to appropriately site the collection equipment and fund operating expenses involved in staffing a monthly collection program and paying for the collection of materials. In FY95, 30 municipalities received 500 gallon waste oil storage tanks valued at $105,000, and 42 municipalities or regional groups serving 51 communities received paint storage equipment grants totaling approximately $172,000.

A major objective of the paint collection program is to encourage exchange and reuse of paint within the community, and recycling of the non-exchanged, reusable paint. Paint that can be neither reused or recycled will be sorted for fuels blending or disposal as a hazardous waste. DEP has contracted with a licenced hauling firm to collect segregated paint and related materials from communities, deliver recyclable paints to an established paint recycling company and arrange for appropriate disposal of the remaining materials. To receive paint storage equipment, a municipality must send relevant employees to a DEP sponsored training program and agree to hold collections at least once a month from April to November.

EOEA and DEP have designed the FY95 surplus paint collection program as a pilot program. DEP is now evaluating how well the program is meeting the needs of those municipalities that received equipment by collecting data from participating communities on amounts of paint and related products collected, utility of the equipment and program costs. This information will be used to modify the program, if necessary, for FY96 and recommend similar equipment grant programs for other materials.

To receive an oil collection tank, municipalities are required to collect used oil and two of the three materials — oil filters, antifreeze, and automobile batteries — which define an "automotive recycling center." The municipality is also required to obtain DEP approval, and pay for, any shelter, containment area, surface pad, or protective barriers that may be necessary. The annual collection cost for all four materials is estimated to be under $1,000 per year. The Department of Procurement and General Services (DPGS) has developed a Master Service Agreement with a hauler to collect each material, allowing all state agencies and municipalities to take advantage of a lower hauling fee.

EOEA is also working with DPGS to "close the loop on recycling" of surplus paint and used oil by encouraging state and municipal agencies to purchase recycled paint and re-refined motor oil, both of which are currently available on state contracts through DPGS.

MSW Combustion Ash Generation

Solid waste combustion facilities burn municipal solid waste to generate electricity and/or steam. Combustion reduces the volume and weight of waste and generates ash that must then be disposed in ash-only landfills, or monofills. Combustion reduces MSW approximately 90% by volume and 75% by weight.

There are nine combustion facilities operating in the Commonwealth and one, the TIRU facility in Shirley, which has been permitted but has not yet commenced construction (Table 5-2). In 1994 these nine facilities reported receiving 3.34 mt of solid waste, and generated approximately 690,000 tons of ash.

Ash Disposal

In 1987 DEP established three ash disposal policies that remain in effect: 1) ash must be disposed in ash-only landfills called monofills, or in separate ash-only sections of MSW landfills such that ash will not be co-disposed with other wastes; 2) combustion facilities must not be constructed unless the facility has developed sufficient ash disposal capacity to handle 20 years of ash at the time of construction; and 3) combustion facilities must be responsible for developing new ash disposal capacity prior to the depletion of available capacity.

These policies were established to ensure that there will be sufficient ash disposal capacity available to handle a facility's ash and that acidic leachate generated by solid waste does not come into contact with ash and increase the chance to leach heavy metals from ash.

Ash is currently disposed of in monofill facilities separate from MSW and non-MSW for several reasons. DEP views ash disposal capacity as an integral part of solid waste combustion facility operation. Ash is also easier to manage and dispose in a monofill than co-disposed in an MSW landfill. In addition, if in the future ash can be demonstrated to be safely used it may be possible to mine a monofill and recover the ash previously disposed for beneficial use. The SEMASS

Table 5-2: Remaining Capacity of Solid Waste Combustion Facility Ash Landfills

Combustion Facility	Ash Monofill LF	Ash Disposed (tons/yr)	Metal Recovery (tons/yr)	Remaining Cap. (years)
Rochester - SEMASS	Carver, Marion, Warehem Ash LF	109,756	14,626 (pre-burn) 22,490 (post-burn) 4,036 (non-ferr.)	3 (Units 1&2) 17 (Unit 3[1])
Fall River Municipal	BFI/Fall River	13,000	None	0.25
N. Andover - NESWC	Peabody LF	97,076	11,601 (post-burn)	21
Haverhill - Ogden Martin Lawrence - Ogden Martin	Ogden/Haverhill	175,663 (combined)	15,652 (post-burn)	11
Saugus - RESCO	Saugus Ash LF	117,636	15,954 (post-burn)	1[2]
Millbury - Wheelabrator	Shrewsbury LF	127,081	2,792 (post-burn)	13
Springfield - SRRI	Bondi Island LF	29,858	141 (pre-burn)	7
Pittsfield - EAC	Pittsfield LF	19,456	1,018 (pre-burn)	2

[1] SEMASS intends to submit a proposal to expand ash disposal capacity for all 3 units.

[2] Based on present consent oreder. EIR filed in May estimates 11 years of potential capacity is available

facility has applied to the Department for a Beneficial Use Determination to use ash as an aggregate in the production of asphalt base course material for use on highways and parking lots. This application is undergoing very careful review by DEP due to the fact that ash contains significant concentrations of heavy metals and the need to ensure that any proposed use will not result in the leaching of those metals from the final product.

The status of ash landfills in Massachusetts is presented in Table 5-2. All but two facilities have in excess of five years remaining capacity.

The majority of combustion facilities recover ferrous metals from ash for recycling and in some cases from the solid waste prior to it being burned. In addition, one facility also recovers non-ferrous metal for recycling. The quantities of ferrous and non-ferrous metal removed from solid waste and ash are also presented in Table 5-2. The total ferrous and non-ferrous metal recovered form ash in 1994 was 88,000 tons and represents a significant savings in landfill capacity.

Tires

Massachusetts generates approximately six million used tires each year. In addition, DEP estimates that there are between seven and ten million tires stockpiled, generally at non-permitted sites.

Bulky and designed for long lives, waste tires are difficult to manage. Disposal in landfills is troublesome because tires may work their way to the top of the facility. As a result, DEP regulations ban whole tires from disposal in landfills. Most municipal waste combustors in the state are not designed to handle large quantities of tires. While certainly preferable, there are few recycling options available for tires.

Several bills to address the tire problem have been filed with the legislature. In general, these bills seek to clarify DEP's authority to regulate tires and provide tools to better manage both newly generated tires and provide a mechanism and funding to clean up existing illegal tire piles.

The future of tire recycling is brightening as new applications develop and markets increase. In Massachusetts, a number of initiatives are under way that may increase the number of recycling options in the state over the next several years. The Massachusetts Highway Department is considering use of recycled tires in rubberized asphalt. In 1994 the agency laid down two road strips in the State to test its viability. Through the University of Massachusetts, MHD is researching other possible uses of tires in road construction, using Clean Environment Funds granted by DEP. Tires are also shredded or chipped for use as boiler fuel, primarily at out-of-state paper mills. DEP has recently reviewed other proposed tire processing facilities, including a tire pyrolysis plant. If any of the proposed processing facilities goes on line, they will greatly increase the state's capacity to recycle waste tires.

In an effort to provide leadership on source-reduction and reuse options, the DEP is exploring options for having state-owned vehicles outfitted with high-quality re-molded tires.

However bright the future looks, the Commonwealth is still faced with a challenge familiar to all New England states: clean-up of existing tire piles and prevention of future piles. To that end, DEP is aggressively enforcing current rules that prohibit stockpiling. The Department has taken

enforcement action at one large tire pile in Brimfield consisting of between 500,000 and 800,000 tires. DEP notified seven potentially responsible parties, and six of these have removed 45,000 tires. DEP now intends to use $515,000 of state funds to remove the remaining tires and clean up the site. A smaller yet still important clean-up is the recently signed agreement by the owner of a 25,000 tire pile in Bridgewater.

EOEA and DEP are currently developing a comprehensive tire management plan which will outline the scope of the tire problem in Massachusetts, provide the state's position on pending tire legislation and include actions DEP will take to eliminate illegal tire piles and cleanup such sites as well as encourage the development of tire recycling technologies in the Commonwealth.

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MASSACHUSETTS SOLID WASTE MASTER PLAN

1995 UPDATE

APPENDICES

COMMONWEALTH OF MASSACHUSETTS

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Governor

Argeo Paul Cellucci
Lieutenant Governor

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Technical Data and Appendices
Table of Contents

APPENDIX A

Summary of Methodologies

Table A-1: Table of methods and assumptions used in estimating different components of waste for the 1994 and the 1995 Master Plan Update.

APPENDIX B

Ten Point Recycling Plan for FY95

APPENDIX C

1994 Overview of Solid Waste

Table C-1: 1994 Integrated Solid Waste Management System Overview

APPENDIX D

Recycling Rate Summary for 1994

APPENDIX E

Recycling Rate Report Card

Table E-1: Recycling Rates and cooresponding recycling grade for Massachusetts communities

Table E-2: Count of grades by type of trash program

Table E-3: Count of grades by type of recycling program

Table E-4: Average recycling rate by grade

Table E-5: Average recycling rate by type of recycling program

Table E-6: Average recycling rate by type of trash program

APPENDIX F

Landfill Facilities

Table F-1: Massachusetts Active Landfills, 1994 Waste Accepted, and Permitted Capacity (1996-2000)

APPENDIX G

Combustion Facilities

Table G-1: Massachusetts Combustion Facilities, 1994 Waste Accepted, and Permitted Capacity (1996-2000)

APPENDIX H

Projection Overview (1996-2000)

Table H-1: Projected waste generation, management and capacity shortfall or excess for 1996-2000 (in tons per year, except where noted)

Figure H-1: MSW and Non-MSW waste generation and management projections for the years 1996-2000).

APPENDIX I

Status Report on Cities and Towns

APPENDIX J
Scope of Recycling Programs in Massachusetts Cities and Towns

APPENDIX K
Battery Policy and Legislation
Table K-1: A comparison of the key provisions in battery legislation of Northeast states
Table K-2: Two proposed battery bills under consideration by the Massachusetts Legislature

APPENDIX L
Policy on Approving Tonnage to Facilitating Unlined Municipal Landfill Closures

APPENDIX M
Biosolids Applications by the Commonwealth of Massachusetts

APPENDIX N
List of Publications from the Division of Solid Waste Management

Appendix A

Summary of Methodologies

INTRODUCTION

In preparing the data presented in the 1995 Master Plan Update, the Division of Solid Waste Management developed a new more comprehensive method for evaluating the state of the solid waste management system. In contrast to the two previous analyses completed for the 1990 and 1994 Master Plan Update, this analysis examines the total system, incorporating both Non-MSW and MSW components of the waste stream. This includes estimates of generation, diversion, and disposal. We anticipate that future presentations will use this approach.

This appendix describes the various methodologies and data sources used in the Master Plan Update. A table summarizing the calculations and methods can be found at the end of this appendix.

GENERATION

Generation refers to the entrance of materials and products into the waste stream, before diversion or disposal take place. There are two main types of waste that the Department tracks: MSW and Non-MSW.

MSW

Municipal Solid Waste are wastes such as durable and nondurable goods, containers and packaging, food scraps, yard trimmings, and other miscellaneous wastes from residential, commercial, institutional, and industrial sources.

There are two primary components of Municipal Solid Waste: residential and commercial. Residential waste includes those wastes generated by Massachusetts households, and commercial waste is generated by the State's many businesses, institutions, and industries.

Population

Per capita generation rates in combination with population estimates were used in estimating total residential MSW generation. The population figures used in this Update are based on data from the 1990 Federal Census and projections from the Massachusetts Institute for Social and Economic Research (MISER). MISER provided the State with community by community population projections for the years 1995 and 2000. From these figures, projected population numbers were interpolated, (calculated using the difference between two known points) using the following equation:

$$1994\,population = \left[\frac{1995\,population - 1990\,population}{5}\right] \times 4 + 1990\,population$$

Where: 1990 and 1995 are two known points; 5 is the number of periods between them; 4 is the difference from 1990 to 1994; 1990 is the base year from which we are calculating.

DEP has included reported tourism numbers from 22 cities and town in the State. Tourism projections for 32 communities in the Berkshire County were unavailable.

Residential Generation

The Master Plan Update employs a survey approach in estimating MSW generation for the residential sector. Rapid expansions of recycling and composting programs necessitate that the quantities diverted be carefully identified and combined with the "disposed" values to obtain accurate generation numbers. Generation data come from the FY95 Division of Solid Waste Management Recycling Equipment Grant Application Survey.

The Department was able to gather reliable data for approximately 68 cities and towns. A regression analysis of this data yielded a good correlation between tons of MSW generated and community size. Results are shown in

Figure A-1. The results from the regression analysis were used as the basis for estimating generation figures for the 283 communities whose survey information was incomplete, unavailable, or unreliable.

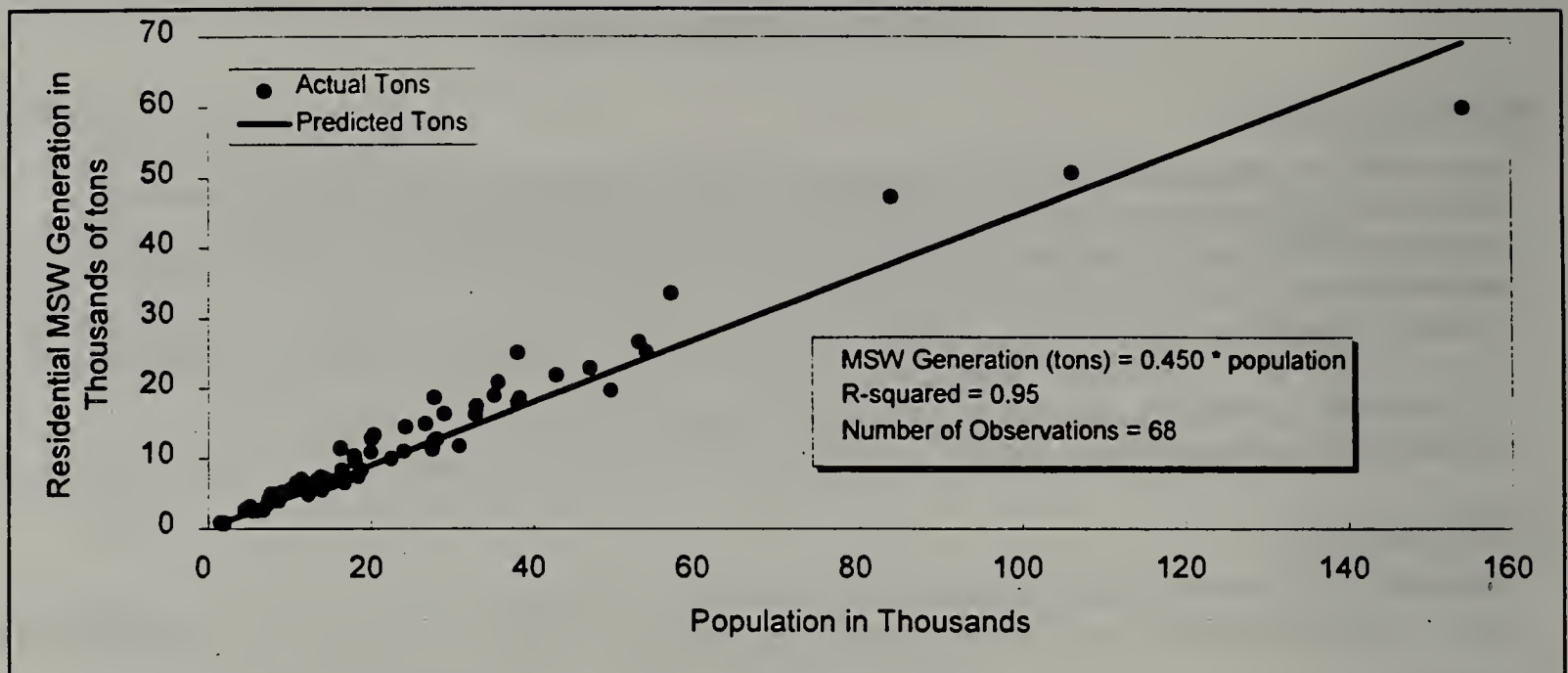


Figure A-1: 1994 Residential MSW Generation vs. Population

Commercial Generation

Due to the lack of available information to directly estimate commercial generation, the estimate was developed from other waste management data. The rational behind the method used for the estimate is that total MSW management (less imports) equals total MSW generation (including exports). Given reported values for MSW disposal in MSW landfills and incinerators, and the amount of import and export, plus the residential MSW generation estimated above, commercial generation was calculated using the following equation:

$$CG = \left[C + MSWLF + MSW\,\mathrm{Re} + MSWE - \mathrm{Im}\right] - RG$$

where: CG= Commercial Generation, C= Combustion, MSWLF = MSW Landfills, MSWRe = MSW Recycling, MSWE = MSW Exports, Im= Imports, and RG = Residential Generation

Non-MSW

Non-MSW includes waste such as industrial waste, construction and demolition waste (C&D), biosolids (waste water and water treatment facility sludges), ash, recycling residue, and miscellaneous waste that does not fall under the definition of MSW. The amount of Non-MSW waste generation in the State was estimated by combining the estimates of Non-MSW waste that was landfilled and incinerated, with estimates of biosolid codisposal and the estimate of C&D material that was recycled.

EXPORTS

Exports of waste to other states in the region is a common practice. Estimates of the amount of waste generated in the state but disposed of out of state was done by contacting state agencies that are responsible for overseeing waste management activities. In addition some individual facilities were contacted.

DIVERSION

Diversion refers to the removal of waste from the waste stream for the purpose of recycling or composting.

MSW DIVERSION

The 1990 Master Plan estimated the recycling rate to be ten percent. This percentage was based on bottle bill recycling estimates, commercial recycling levels and limited survey information of residential recycling and composting. By contrast, research and analysis of waste diversion levels for the 1994 and 1995 Update has been conducted through the review of four discrete subsets: residential recycling, residential composting, commercial recycling and commercial composting. Each is reviewed separately below.

Residential Recycling

The estimate for residential sector recycling is based primarily on the tabulation of tonnage reports from municipalities. Information from 1994 municipal surveys (reporting on FY94 and FY93 activity) provided tonnage data for more than 200 communities. For each of the major recyclable materials, there were as many as 50 to a 100 municipalities that provided recycling services but which did not report a tonnage for a given material type. Estimates for the tonnage of the unreported materials recycled by these municipalities were calculated using reported materials recovery rates from those municipalities who reported their tonnage.

Bottle bill recycling results are credited toward the residential recycling rate. Container recovery (deposit redemption) rates were obtained from the Massachusetts Department of Revenue for 1992. The recycled tonnage represented by the recovered container stream is estimated using trade association data on both material composition of the beverage container stream (glass, aluminum, plastic, etc.) and average unit weights for different container types. Composition percentages have been adjusted to reflect Massachusetts specific conditions based on information provided by deposit container collection companies.

Residential Composting

The estimate for the residential composting was calculated using data provided to the department in compost facility reports. However, not all facilities reported their composting rates. The change in amount of material composted between 1992 and 1994 by reporting towns was extrapolated to all towns that had composting programs in 1992 and 1994. The combination of reporting towns and extrapolated rates from unreported towns was used to estimate residential composting.

Commercial Recycling

DEP conducted an analysis of "value added" by the recycling industries of Massachusetts in 1992. This survey sought to determine the quantities of materials baled (or otherwise densified) by processors of glass, steel, aluminum, plastic and paper. The survey used "baled" tonnage to represent the tonnage of a particular material collected for recycling in Massachusetts. Total quantities of waste recycled, for the major material types, was then calculated.

In 1994, another study, which confirmed and built on the previous study's analysis, was completed. The methodology used involved estimating total recycling and then subtracting residential recycling to derive a commercial recycling estimate. This approach was used due to the relative difficulty in estimating commercial recycling directly, and the relative accuracy of residential recycling estimates.

To quantify amounts recycled, data was gathered by surveying material processors. The surveys solicited information on the quantity, type and origin (in- or out-of-state) of the material(s) processed. Data was compiled into five main categories: paper, plastics, cans, other metals, and glass. For the responding firms, a processing rate, in tons per employee per year, was determined for each material or processor type. Employment data was used to extrapolate estimates for non-responding firms. Recycling quantities estimated using this method were based on post-manufacturing activities, meaning that broken glass, paper, and steel trimmings recovered at the back-end of the production process are not included in the totals.

In 1994 the data used in the analysis for the 1992 Master Plan Update was not available at the time of publishing. However, using the increase in residential recycling between 1992 and 1994, commercial recycling was conservatively estimated to have increased by 10%.

Commercial Composting

Due to the unavailability of any new data on compositng activity at Massachusetts' buisnesses and institutions, the amount of material that was commercial composted was estimated to be unchanged from 1992.

Non-MSW DIVERSION

The amount of Non-MSW that was diverted away from landfills and combustion facilities was estimated using the "1993 C&D Waste Processing Survey" published by the Department that summarizes the C&D processing capacity of the state in 1993. A more detailed discussion of this report is presented in the Update in Chapter 5.

DISPOSAL

Disposal refers to the processing and final disposal of waste at either a landfill or combustion facility.

MSW

MSW COMBUSTION FACILITIES

There are nine combustion facilities operating in Massachusetts. Six utilize a mass burn technology that recaptures energy, two process refuse derived fuel before burning and recapturing energy, and one, a municipal incinerator neither processes MSW nor recaptures energy. Estimates for tons of MSW burned in 1994 are based on reports by each of the State's active combustion facilities.

Pre- and post-burn separation of metals have also been estimated. Four facilities perform pre-burn separation of ferrous materials. Seven perform post-burn recovery of metals, and three facilities perform both pre- and post-burn metal recovery.

MSW LANDFILLS

The amount of MSW landfilled in 1994 was estimated using data from 1994 facility operating reports and facility survey information. A correction was made in the estimate of MSW landfilled to account for the Non-MSW that the Department believes was misclassified as MSW by landfill facilities. The correction of 200,000 tons was moved from MSW landfilled to Non-MSW landfilled.

Non-MSW

Non-MSW LANDFILLS

In 1994 there were two facilities that limited their intake to Non-MSW waste. These facilities reported to the Department the amount and type of waste that they accepted in 1994.

IMPORTS

Massachusetts was a net importer of MSW in 1994. Imports of waste into Massachusetts were estimated from both 1994 landfill facility reports and from reports from the combustion facility operators. Massachusetts does not have a manifest system which is able to track waste sources as some other states. In reporting their tonnage, landfill and combustion operators attempt to distinguish between and import and local waste based on their knowledge of hauler routes. This situation suggests that based on facility reports the Department will underestimate the amount of imports. Because of this the Department believes a correction is necessary and therefore 200,000 tons of MSW waste was reassigned to import.

CAPACITY PROJECTIONS

As a general matter, capacity projections are based on the anticipated annual capacity available after January 1, 1996 for facilities permitted to accept waste as of that date. The projections also reflect the combustion facility in Shirley will not come on line until 1999.

The DEP will also continue to assume that the goals outlined in the 1990 Solid Waste Master Plan will be met. These goals and other assumptions underlying the statewide ISWM projections are listed below:

- All landfills will close according to current permit or projected dates (whichever is the greater restriction)
- Existing combustion facilities will operate at full capacity, with on-line availability determined on a facility specific basis
- All MSW landfills that accepted non-MSW waste in 1994 and are operating in 1996 and 1997 are assumed to continue to take in the same proportion of non-MSW in 1996 and 1997 as accepted in 1994. After 1997 it is assumed that all MSW will go to designated MSW capacity capacity and all non-MSW will go to non-MSW capacity, eliminating codisposal.
- Source reduction will offset growth in population and per capita generation of MSW, resulting in a MSW generation total of 6.75 million tons for 1996 through 2000
- MSW Recycling goals will be met (34 percent in 1996 with a 3% annual increase to 46 percent by 2000)
- Non-MSW generation will equal the base generation (including all types of Non-MSW waste except biosolids) plus the amount of biosolids disposed of in solid waste landfills
- Biosolids disposal will equal 90,000 tons in 1996, 45,000 in 1997, 25,000 in 1998, 10,000 in 1999 and no biosolid disposal in 2000
- Non-MSW recycling will be approximately 2 million tpy
- 50 percent of MSW will be combusted by 2000, and four percent landfilled;
- The State will be neither a net importer or exporter of municipal solid waste.

Table A-1: Table of methods and assumptions used in estimating different components of waste for the 1994 and the 1995 Master Plan Update.

Waste Component	1994 Master Plan Update	1995 Master Plan Update
GENERATION		
Gross MSW Generated	Commercial MSW Generation + Residential MSW Generation	Commercial MSW Generation + Residential MSW Generation
Residential MSW Generated	(sum of a) + (sum of b)	(sum of a) + (sum of b)
	a) Residential MSW disposed + residential MSW composted + residential MSW recycled (for 236 communities)	a) Residential MSW disposed + residential MSW composted + residential MSW recycled (for 68 communities)
	b) plot population on regression of the above (115 communities)	b) plot population on regression of the above (283 communities)
Commercial MSW Generated	2 methods:	Commercial generation = (Combustion + MSW landfilling + MSW recycling + MSW exports, - MSW imports) - Residential generation (this number was adjusted down by 200,000 tons to account for misclassified waste)
	1) Gross MSW Generated - Residential MSW Generated = Commercial MSW Generated	
	2) Sum for all MA SIC codes (xSIC Generation rate per employee) x # of employees in xSIC)	
Projected Gross MSW Generated	6.75 Million Tons	6.75 Million Tons
Gross Non-MSW Generated	not calculated	Tons Processed & Recycled + Tons Landfilled + Tons Incinerated (this number was adjusted up by 200,000 to account for misclassified waste)
Projected Gross Non-MSW Generated	not calculated	2.67 mt in 1996, 2.63 mt in 1997, 2.6 mt in 1998, 2.59 mt in 1999, and 2.58 mt in 2000
Export		estimated by contacting neighboring states waste management offices

DIVERSION

Gross MSW Diversion	Residential Recycling + Residential Composting + Commercial Recycling + Commercial Composting	Residential Recycling + Residential Composting + Commercial Recycling + Commercial Composting
Residential MSW Diversion	Data from various sources and extrapolation for communities w/o data; includes bottle bill materials, and composting numbers	Data from various sources and extrapolation for communities w/o data; includes bottle bill materials, and composting numbers
Commercial MSW Diversion	Surveys and extrapolations + composting numbers	Assumed to be a fixed percentage increase over 1992
Projected Gross MSW Diversion	Using Master Plan Goal Recycling Percentages: 34% in 1996 and 46% in 2000, Goal Percentage x Projected Gross MSW Generated	Using Master Plan Goal Recycling Percentages: 34% in 1996 and 46% in 2000. Goal Percentage x Projected Gross MSW Generated (6.75 mt)
Gross Non-MSW Diversion	not calculated	Survey results from the C&D Processing and Recycling report for the calendar year 1993.
Projected Gross Non-MSW Diversion	not calculated	2.02 mt (this is only C&D and does not consider other non-MSW that is diverted (e.g., biosolids))

DISPOSAL

Total Tons Combusted	Sum of each facility's permitted burn tonnage x (% on-line availability) - (pre-burn recycled tonnage (metals)) Same as Combustion Disposal Capacity listed below	As reported by facility operators
Tons Exported	Communication with other state agencies and known disposal locations outside of the State	Communication with other states, haulers, and the city of Boston
Tons Imported	Communication with other states	As reported by landfill, incinerator, and transfer station facility operators. Data was also used from the C&D Processing and Recycling report.
Total Tons Landfilled	Gross MSW Generated - (Total Tons Combusted) - (Total Tons Diverted) - (Tons Exported)	From information received on the 1994 Annual Landfill Reports.
Import		As reported from facility operators

DISPOSAL CAPACITY

Combustion Disposal Capacity	Sum of each facility's permitted burn tonnage x (% on-line availability) - (pre-burn recycled tonnage (metals)). Same as Total Tons Combusted listed	Sum of each facility's permitted burn tonnage x (% on-line availability) - (pre-burn recycled tonnage (metals)). Same as Total Tons Combusted listed

	above	above
Projected Combustion Capacity	Same as above, including capacity for facilities that are permitted to construct.	Same as above, including capacity for facilities that are permitted to construct.
Landfill Disposal Capacity	Total permitted annual tonnage (daily x operating days) and historical data for landfills without specified permitted tonnages for all landfills, single-municipal, regional-municipal and private operations	Total permitted annual tonnage (daily x operating days) and historical data for landfills without specified permitted tonnages for all landfills, single-municipal, regional-municipal and private operations
Projected Landfill Capacity	Total permitted annual tonnage (daily x operating days) and historical data for landfills without specified permitted tonnages for commercial and lined regional and single-municipal facilities and those unlined facilities with a permit expiration data after 1994. Includes single-municipal, regional-municipal and private operations	Total permitted annual tonnage (daily x operating days) and historical data for landfills without specified permitted tonnages for commercial and lined regional and single-municipal facilities and those unlined facilities with a permit expiration data after 1994. Includes single-municipal, regional-municipal and private operations. One adjustment was made to this number for the planning years 1996 and 1997. All MSW landfill capacity that received non-MSW are assumed to continue to accept a similar proportion of non-MSW in 1996 and 1997. The adjustments were made in the aggreagate and not to individual facilities and are therefore not reflected in the permitted capacities of individual landfill facilities.

WASTE NEEDING DISPOSAL VS DISPOSAL CAPACITY

Tons MSW Needing Disposal	Gross MSW Generated - Total Tons of MSW Diverted (Note: projections do not account for import or export of MSW, as one goal of MA is to not be a net importer or exporter of MSW; however, profiles of years past will account for these numbers)	Gross MSW Generated - Total Tons of MSW Diverted (Note: projections assume that net imports equals 0).
Tons of Non-MSW Needing Disposal	not calculated	Gross Non-MSW Generated - Total Tons of Non-MSW Diverted (Note: projections assume that net imports equals 0).
Difficult to Manage Waste Disposed at MSW Facilities	Ten percent of Gross MSW Generated	Not calculated
Tons Shortfall/Excess of MSW Disposal	not calculated	Tons MSW Needing Disposal - (Combustion Disposal Capacity + Landfill Disposal Capacity)

Tons Shortfall/Excess of total system Disposal Capacity	not calculated	Tons MSW Needing Disposal + Tons of Non-MSW needing disposal- (Combustion Disposal Capacity + Landfill Disposal Capacity)

Appendix B

Ten Point Recycling Plan for FY95

This Ten Point Recycling Plan was developed by the Executive Office of Environmental Affairs (EOEA) and the Department of Environmental Protection (DEP), with assistance from representatives from municipal and regional government agencies, the solid waste industry, environmental groups, and others with expertise in solid waste and recycling.

The Recycling Plan accounts for the $5 million that was appropriated by the Legislature for fiscal year 1995 from the Clean Environment Fund (CEF), which is the dedicated fund for unclaimed bottle deposits. This is the first comprehensive Recycling Plan developed by the Commonwealth from CEF resources.

The ten recycling programs described below represent over 40 different projects, many of which have been newly created. Several of the programs listed below are part of an overall $3.1 million municipal grant program, for which the agency received nearly $10 million in requests. The municipal grants program includes: recycling and composting equipment grants, public education materials, household hazardous waste collection equipment, and recycling transfer station assistance.

Together, these programs will help to "close the loop on recycling" through the collection, processing, remanufacture, and procurement of recycled materials and products. They will also help to expand recycling in Massachusetts to meet the Commonwealth's recycling goal of 46% by the year 2000.

BUDGET SUMMARY:

1. Municipal Recycling and Composting Equipment Grants	$ 770,000[1]
2. Public Education Recycling Campaign	930,000
3. Municipal Household Hazardous Waste Program	350,000
4. Recycled Product Procurement Program	305,000
5. Recycling Transfer Station Grants	460,000
6. Municipal Guaranteed Annual Tonnage Assistance	350,000
7. Plastics Recycling - Research and Development	120,000
8. Higher Education Fund	250,000
9. Recycling Business Development	515,000
10. Springfield Materials Recycling Facility	950,000
TOTAL RECYCLING EXPENDITURE:	**$5,000,000**

[1] Actual spending includes $770,000 from the CEF and an additional $1,000,000 from the DEP bond fund, which is the same bond expenditure in each of the last two years.

1. MUNICIPAL RECYCLING AND COMPOSTING EQUIPMENT GRANTS — $1,770,000 (includes $1 million from bond fund)

Since 1990, the Department of Environmental Protection (DEP) has operated a successful municipal recycling and composting grant program that fulfills the equipment needs of municipal recycling and composting programs. Recycling equipment offered in the fiscal year 1995 (FY 1995) grant program includes: recycling trucks and set-out containers for curbside recycling communities; roll-off containers for drop-off programs; home composting bins; and new equipment, such as plastic processing equipment and 100 cubic-yard trailers to collect materials at transfer stations. The large-capacity trailers will significantly reduce transportation costs, especially for communities hauling their recyclables long distances for processing. The home composting bins are available in two styles, one made from 100 percent post-consumer plastic and the other with 50 percent post-consumer content.

2. PUBLIC EDUCATION RECYCLING CAMPAIGN — $930,000

This Campaign responds to a number of needs for recycling education within the Commonwealth. Most of the funds will be distributed under the municipal grant program for recycling education brochures, as well as aid to the City of Boston in starting its city-wide curbside recycling program, which began in November, 1994. In addition, funding will support four composting programs that will reduce the amount of solid waste that is disposed of in landfills.

Recycling Educational Materials: In FY 1994, this new addition to the municipal grant program paid for the design, printing, and mailing of professionally-prepared, 100-percent recycled-content recycling educational materials to approximately 1 million households, encouraging participation in over 150 municipal recycling and composting programs. By providing a standard graphic arts, printing, and bulk mail contract, EOEA and DEP were able to provide sophisticated brochures tailored to the needs of each municipal applicant, for less than half the cost a municipality would pay to purchase the service on its own. The popularity of the grant program led the agencies to expand the program this year. Also, new educational materials will be created for the household hazardous waste equipment grantees.

Boston Educational Grant: A City of Boston educational grant of $100,000 was specifically granted by the Legislature for the design and implementation of special outreach programs to increase participation in the City's program, which is the Commonwealth's largest curbside recycling program. The grant will include public education materials, technical assistance, and outreach, in addition to recycling equipment.

Recycling Hotline: A non-profit recycling hotline has been contracted to handle calls from residents seeking up-to-date information from their local recycling programs. This hotline is updated by municipal and regional recycling managers, and will free up the time of DEP, EOEA, and municipal employees, who field numerous basic recycling questions each day.

Recycling Newsletter and Guide: A municipal recycling newsletter and guide will be made available to recycling and composting coordinators throughout the state. The newsletter will include an annual Recycling Guide showing the exact locations, hours of operation, and materials handled by each recycling program in the Commonwealth.

Regional Recycling Coordinators: For the first time, this year's grant application invited groups of public and non-profit officials to request funding to hire regional recycling coordinators for specific projects, although not for ongoing operating expenses. This project is based on the Millis Recycling Consortium effort funded by DEP in FY 1994. CEF funds will be used to hire recycling coordinators to coordinate the recycling efforts of a number of communities in a regional consortium. Among the projects to be funded this year will be a Regional Recycling Program to provide recycling services to public schools.

Composting Projects: Funding will be provided for four composting projects that will reduce the amount of solid waste that is disposed of in landfills. Some of these projects expand the boundaries of solid waste disposal beyond the municipal and commercial level to also include industrial solid wastes. The following four projects are being

funded by EOEA but managed by the Department of Food and Agriculture: (1) research and identification of workable solutions to the manure management problems facing the Massachusetts horse industry; (2) a composting demonstration at Franklin Park Zoo that will reproduce the Seattle-famous "Zoo Doo"; (3) a pilot project to compost produce waste from Boston's Haymarket; and (4) the testing of a passive in-vessel system for on-site composting of aquaculture wastes. This last project will address an ongoing impediment to successful aquaculture related to the disposal of dead fish and processing wastes.

3. MUNICIPAL HOUSEHOLD HAZARDOUS WASTE PROGRAM $350,000

Hazardous household products are a potential risk to public health and the environment. Municipal officials, however, are overwhelmed by the public demand for solutions on how to manage these wastes, and are looking to the state for guidance. Consistent with the purpose of the CEF, this new program encourages the cost-effective source reduction, recycling, and reuse of specific hazardous household products. Funds are being provided for paint sheds (for the reuse, recycling, and disposal of unwanted paint); used oil collection facilities (as part of a municipal "automotive recycling center"); training sessions for municipal officials in the identification and separation of various paint types; and for policy research on used motor oil and oil filters. These projects are being coordinated with other EOEA efforts to reduce the toxicity of municipal solid waste, such as battery legislation and policy revision, battery collection programs, and a comprehensive household hazardous waste management plan.

Paint Sheds/Motor Oil Storage Tanks: These new equipment grant items will be awarded based on a municipality's ability to fund operating expenses involved in staffing the collection facilities and paying for the necessary contractor services. To receive a paint shed or storage equipment, the municipality must agree to pay for a contractor that will reuse, recycle, and/or dispose of the collected paint, which is the largest item in any household hazardous waste collection event. Municipalities are required to verify a market for the paint, and may be required to guarantee that a certain percent of the paint is reused and recycled.

To receive an oil collection tank, the municipalities will be required to collect used oil and two of the following three materials which, together, comprise an "automotive recycling center": oil filters, antifreeze, and automobile batteries. The municipality will also be required to obtain DEP approval, and pay for, any shelter, containment area, surface pad, or protective barriers that may be necessary. The annual collection cost for all four materials is estimated to be under $1,000 per year. EOEA and DEP are working with the Department of Procurement and General Services to secure the services of a hauler to collect each material on a state contract, which will allow all state agencies and municipalities to take advantage of a lower hauling fee.

Consulting Services: Two types of consulting services are being contracted: (a) training of municipal officials to administer the paint collection program (including sorting, screening, testing, and consolidating the paint); and (b) the research and evaluation of policy options on used motor oil and oil filters generated by Massachusetts residents that change their own oil and oil filters. This research will be the basis for EOEA to develop policy and legislative initiatives. This research is currently underway and is being conducted with the assistance of business and environmental representatives, as well as local and regional government officials.

4. RECYCLED PRODUCT PROCUREMENT PROGRAM $305,000

This program is aimed at increasing the purchase of recycled products by state and municipal government, businesses, and consumers, in order to strengthen markets for materials collected through recycling. The majority of this year's budget is being used to build on Governor Weld's Clean State Initiative to increase government purchases of recycled products. The rest of the funds are being used to develop new programs to encourage recycled purchasing by businesses and consumers.

Government Purchases: To increase government purchases of conventional recycled products, two staff dedicated to recycled purchasing have been hired to work at the Department of Procurement and General Services (DPGS). Their work includes contacting vendors and researching recycled products, modifying specifications, training

buyers, and holding workshops for state agencies and municipalities. This spring, a consultant will research definitions in use by other state agencies and organizations to aid in establishing standards and guidelines for the purchase of environmentally preferable products (e.g., "recycled paper"). These efforts are expected to nearly double DPGS' FY 1994 recycled purchasing total of $8.2 million.

To increase government purchases of transportation-related recycled products, a University of Massachusetts (UMass) professor is researching recycled products in use in highway construction projects in other states. A joint Massachusetts Highway Department (MHD)/Department of Environmental Protection advisory committee will use the professor's work to develop a workplan for testing and piloting the use of the most promising products identified. In a separate project, UMass staff will conduct 5 to 6 workshops around the state this spring to educate municipal officials and highway contractors about the use of recycled materials in highway construction. Both projects complement work already underway between MHD and DEP. The most specific result to date has been a modification to MHD specifications to allow the use of glass aggregate in road construction.

Business Purchases: To increase business purchases of recycled products, the DEP, in partnership with the National Recycling Coalition, is launching the Massachusetts Buy Recycled Business Alliance this spring. Modeled on the successful national effort, this program will reach out to Massachusetts businesses to ask them to commit to increasing their purchases of recycled products and to report their total dollars spent on recycled products annually. Businesses making this commitment will receive a training manual, a quarterly newsletter, access to workshops, and other technical assistance.

Consumer Purchases: To increase consumer purchases of recycled products, an organization with experience in advertising and public relations will be working this spring to distribute to the Massachusetts media (television, radio, and newspaper) the large number of public service announcements that have already been produced by a number of prominent organizations. A small portion of these funds will also be used to increase Massachusetts media exposure to one of the national "Buy Recycled" campaigns run by groups such as the National Recycling Coalition and the Environmental Defense Fund. These funds may also be used to develop and distribute public education materials, and to outline a comprehensive strategy for targeting consumers to buy recycled products.

5. RECYCLING TRANSFER STATION GRANTS — $460,000

EOEA and DEP will provide grants to two regional groups of municipalities for the construction and engineering of regional recycling transfer stations, which will accept recyclables (paper, bottles, and cans), compost and, if a landfill closure is forthcoming, solid waste from surrounding communities. These transfer stations will assist municipalities that need to transport their recyclables and wastes longer distances now that their unlined landfills are scheduled to close, as well as areas of the state with high recycling and composting transportation costs. After screening a first round of applicants, DEP is now reviewing a smaller group of detailed second applications that provide follow-up information, such as a facility operation plan and the nature of agreements among municipalities to be served by the transfer station.

CEF funds will be used for the siting and construction of the facilities, in cooperation with the Division of Capital Planning and Operations. The contracting entity (either a single municipality or a regional entity) would administer the facility's operation. DEP will also work with other communities or regional organizations to plan and design transfer stations for consideration in FY 1996 if those projects are not yet ready to be considered this fiscal year. Based on the grant applications, DEP may fund engineering studies necessary to design one or more transfer stations for construction in FY 1996.

The awarding of funds for the development of transfer stations will be closely coordinated with other municipal grant awards, such as transfer trailers and technical assistance through regional recycling coordinators.

6. **MUNICIPAL GUARANTEED ANNUAL TONNAGE ASSISTANCE** $350,000

The 23 municipalities that form the Northeast Solid Waste Committee (NESWC) are one group seriously affected by both "put-or-pay" contracts and recycling costs. These communities have signed contracts with a waste-to-energy facility in North Andover to send a Guaranteed Annual Tonnage (GAT) of solid waste to the facility. Since there is no "avoided disposal cost" to offset recycling costs, these municipalities face a disincentive to recycle. As a result of these GAT contracts, a recycled ton is paid for twice, once to the disposal facility as part of its guaranteed annual tonnage requirement, and a second time to recycle it. These communities are needed to reach state recycling goals of 34 percent by 1996 and 46 percent by the year 2000, and are the only ones in the Commonwealth we know of that are paying twice for the same ton of solid waste.

DEP has signed agreements with the 23 NESWC municipalities that are loosely based on contracts the Department has signed with western Massachusetts communities for free access to the Springfield materials recycling facility. During FY 1995, EOEA and DEP will provide participating municipalities with recycling assistance based on the tonnage of recyclables diverted by each municipality's curbside or drop-off recycling program. Municipalities with curbside programs will receive a higher per ton reimbursement because of the higher costs they face. DEP has contracted with the firm that manages NESWC's operations to coordinate a regional recycling program among the NESWC communities, to assemble documentation of recycling costs incurred by these communities, and to assist the Department in the processing of grant contracts.

The municipalities signing GAT assistance contracts have committed to achieving substantial improvements in their recycling and composting efforts to remain eligible for the recycling assistance. DEP will reimburse all. or a portion of, a municipality's recycling tip fee if that municipality meets the eligibility requirements (e.g., establishes a Department-Approved Recycling Program or passes a mandatory recycling ordinance) and shows proof that it has paid the disposal facility for tonnage not delivered as a result of recycling or composting.

7. **PLASTICS RECYCLING - RESEARCH AND DEVELOPMENT** $120,000

Of the materials currently being recycled both in Massachusetts and across the country, plastic products and packaging present unique challenges to being cost-effectively and efficiently collected, processed, marketed, and used as a recyclable commodity. CEF funds will be used to tap the extensive plastics research capabilities of the University of Massachusetts, particularly at the Center for Environmentally Appropriate Materials (CEAM) at the Lowell campus and at the Polymer Science and Engineering Department in Amherst.

Three research projects were selected for funding in FY 1995, two of which will be collaborative projects between researchers at both UMass campuses. The three projects to be funded through the CEF include: (1) an evaluation of plasticating and compounding screw designs to allow plastics to be processed in a less pure form; (2) use of supercritical carbon dioxide to process oil contaminated plastics (e.g., motor oil containers); and (3) research into specially-designed plastic packaging that can be composted.

8. **HIGHER EDUCATION FUND** $250,000

This new program involves up to 30 recycling internships for students enrolled at one of four campuses of the University of Massachusetts and two Boston-area community colleges; a technology transfer program at the University of Massachusetts Amherst campus; and two agency interns.

Recycling Internship Fund: These funds are being used for University-wide recycling internships to provide students with an opportunity to gain entry-level experience in the recycling field. This new program encourages diversity among interns, with Roxbury Community College and Bunker Hill Community College receiving a portion of the total funds. Students from the University of Massachusetts and the two community colleges are being placed in municipal, regional, or state government agencies where they will assist with the establishment of public recycling efforts; at non-profit organizations to work on public outreach and education efforts promoting recycling;

in the private sector assisting recycling mills and hauling services; or in research positions throughout the University.

Recycling Technology Transfer: The University of Massachusetts (Amherst) Office of Waste Management has created a unique, hands-on recycling facility for the collection and processing of recyclables generated at the campus and in the surrounding community. The University will receive a grant for the transfer of recycling technology and systems developed at the University. Funding will be targeted toward a small business recycling pilot program that will help address problems with recycling that are unique to small businesses. The focus of the pilot program will be on small businesses in the Amherst area.

Recycling Interns: EOEA has hired two interns to assist with recycling programs, including development of the FY 1996 Clean Environment Fund budget; development of policy and legislative recommendations for used oil and oil filters; and outlining a comprehensive household hazardous waste management plan.

9. RECYCLING BUSINESS DEVELOPMENT $515,000

This new program aims to stimulate the financial sector and the state's extensive economic development network to provide greater assistance to recycling-related businesses, a key component to establishing a viable recycling infrastructure. The program has two components: (1) developing a loan fund to leverage private sector financing for recycling-related businesses, and (2) funding staff at some of the state's economic development agencies to provide technical assistance to recycling-related businesses.

Recycling Loan Fund: The purpose of the recycling loan fund is to increase the availability of capital to small recycling-related businesses for expansion and new investment. Under a contract to develop the loan fund, The Massachusetts Business Development Corporation (MBDC) is holding meetings with the Massachusetts Banking Association to discuss the fund, surveying recycling-related businesses as to their financing needs, and developing the final terms and conditions of the loan fund. By mid-spring, money will be transferred to MBDC to begin actively marketing the program to the state's banks. Preliminary feedback from recycling-related businesses and banks suggests that the first loans should be made by early summer, and that demand could exist to substantially expand this program in future years.

Business Planning Assistance: As a pilot effort to encourage the state's economic development agencies to expand the business planning assistance they offer to recycling-related businesses, a full-time professional will begin work by early spring for the Industrial Services Program, a quasi-public agency that provides consulting services to small and medium-sized manufacturers. The recycling business consultant will work with the state's paper mills, many of which are older, struggling firms, to explore ways to improve their economic efficiency through continued or expanded use of waste paper as a raw material.

Plastics Manufacturing Project: To motivate the state's new $30 million a year industrial extension service to focus some of its resources on recycling, EOEA and DEP are funding another quasi-public agency for a plastics manufacturing project this spring. Modeled on successful projects in other states, the pilot project will provide consulting assistance to a group of plastics manufacturers in the north-central region of the state, helping them make technological process changes that will increase their use of waste plastic as a feedstock. If successful, an expanded program would be planned to assist the state's extensive plastics industry and other manufacturers capable of using recycled feedstocks.

10. SPRINGFIELD MATERIALS RECYCLING FACILITY (MRF) $950,000

These funds provide for current operating expenses at the Springfield MRF, which guarantees the continuation of service to over 100 western and central Massachusetts communities. In 1993, the DEP successfully brought the operating cost of the Springfield MRF down from $1.9 million per year to $1.1 million, through improved contract administration and marketing. The next 5.5-year contract (with a 10-year option after 12 months) will be signed

this spring for the period 1995-2000. The new contract is projected to cost the state less than $100,000 per year over the next five years. In fact, it promises to provide net revenues to DEP for the sale of recyclables during the first years of the program.

DEP must still rely on current CEF funds for uncertain costs during the transition from the current vendor to a new facility operator. Funds are also being used for paving, construction, and site improvements to the adjoining land recently procured by the Commonwealth's Division of Capital Planning and Operations for expansion of the site.

Cooperative Marketing Fund: In addition to the lower SMRF operating cost, the new contract incorporates the cost to administer a Cooperative Marketing Fund. This fund establishes a "safety net" to insulate the collection of recyclables from commodity price cycles, helping to stabilize markets. The sale of collected recyclables at a low base price is guaranteed, allowing municipalities and the vendors who service them to plan for reasonable "worst case scenarios" over longer term contracts, without disrupting the flow of commodities during normal markets.

Appendix C

1994 Overview of Solid Waste

Table C-1: 1994 Integrated Solid Waste Management System Overview

Total Generation (includes 426,000 tons of exported waste)				**9,710,000**
MSW			7,050,000	
Residential	2,870,000			
Commercial	4,180,000			
Non-MSW			2,660,000	
C&D	2,420,000			
Biosolids	90,000			
Other	150,000			
Total Management (includes a net import of 370,000 tons of waste)				**10,080,000**
Diversion			4,060,000	
MSW			2,160,000	
Residential Rec.	420,000			
Commercial Rec.	1,070,000			
Res. Composting	440,000			
Com. Composting	230,000			
Non-MSW			1,900,000	
C&D	1,900,000			
Disposal			6,020,000	
Landfill			2,680,000	
MSW	1,900,000			
C&D	550,000			
Biosolids	90,000			
Other	140,000			
Combustion			3,340,000	
MSW	3,320,000			
Non-MSW	20,000			

Appendix D

Recycling Rate Summary for 1994

Material Type	Materials Recycled (tons)
Paper	230,959
Metal	74,534
Plastic	20,544
Glass	90,975
TOTAL	417,012

Appendix E

Recycling Rate Report Card

The Recycling Report Card contains self-reported data provided to the Department by the cities and towns of Massachusetts. The table below differs from the Report Card published in February 1995 as it contains updated information received from these communities. The Department will continue to work with communities to improve the quality and consistency of recycling reporting during this year and into the future.

Table E-1: Recycling Rates and cooresponding recycling grade for Massachusetts communities

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	 Recycling
AGAWAM	A	32%	Curbside	Curbside
ALFORD	A	34%	Drop-off	Drop-off
AMHERST	A	40%	Both	Both
ANDOVER	A	30%	Curbside	Both
ASHFIELD	A	32%	Drop-off	Drop-off
BEDFORD	A	33%	Curbside	Both
BELCHERTOWN	A	37%	Drop-off	Drop-off
BEVERLY	A	36%	Curbside	Curbside
BOXFORD	A	35%	Curbside	Both
BRIMFIELD	A	33%	Drop-off	Drop-off
BROOKLINE	A	32%	Curbside	Both
BUCKLAND	A	32%	Curbside	Drop-off
CARLISLE	A	34%	Drop-off	Drop-off
CHARLEMONT	A	45%	Drop-off	Drop-off
CHESTER	A	30%	Drop-off	Drop-off
CHESTERFIELD	A	31%	Drop-off	Drop-off
CHILMARK	A	36%	Drop-off	Drop-off
COHASSET	A	30%	Drop-off	Drop-off
CONCORD	A	33%	Curbside	Both
CONWAY	A	49%	Drop-off	Drop-off
EDGARTOWN	A	36%	Drop-off	Drop-off
ERVING	A	42%	Curbside	Curbside
GAY HEAD	A	36%	Drop-off	Drop-off
GILL	A	39%	Drop-off	Drop-off
GOSHEN	A	37%	Drop-off	Drop-off
GRANVILLE	A	37%	Drop-off	Drop-off
HADLEY	A	41%	Drop-off	Drop-off
HALIFAX	A	41%	Curbside	Both
HATFIELD	A	40%	Drop-off	Drop-off
HAWLEY	A	32%	Drop-off	Drop-off
HINGHAM	A	38%	Drop-off	Drop-off
IPSWICH	A	35%	Curbside	Both
LEVERETT	A	36%	Drop-off	Drop-off
LEXINGTON	A	37%	Curbside	Both
LONGMEADOW	A	48%	Curbside	Curbside
MAYNARD	A	32%	Curbside	Both
MILTON	A	38%	Curbside	Both
NEEDHAM	A	33%	Drop-off	Drop-off
NEWTON	A	39%	Curbside	Both
NORFOLK	A	46%	Drop-off	Drop-off
NORTH ANDOVER	A	36%	Curbside	Both
ORANGE	A	50%	Drop-off	Drop-off
PLAINFIELD	A	39%	Drop-off	Drop-off
RAYNHAM	A	34%	Drop-off	Drop-off
REHOBOTH	A	32%	Drop-off	Drop-off
ROCKPORT	A	41%	Private	Drop-off

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	 Recycling
SEEKONK	A	35%	Curbside	Curbside
SOUTHAMPTON	A	37%	Drop-off	Drop-off
STOCKBRIDGE	A	41%	Drop-off	Drop-off
STURBRIDGE	A	48%	Drop-off	Drop-off
TOWNSEND	A	33%	Curbside	Drop-off
WAKEFIELD	A	35%	Curbside	Curbside
WARWICK	A	37%	Drop-off	Drop-off
WASHINGTON	A	31%	Drop-off	Drop-off
WAYLAND	A	51%	Drop-off	Drop-off
WELLESLEY	A	30%	Drop-off	Drop-off
WENDELL	A	31%	Drop-off	Drop-off
WEST TISBURY	A	36%	Drop-off	Drop-off
WHATELY	A	42%	Drop-off	Drop-off
WILLIAMSTOWN	A	43%	Drop-off	Drop-off
WORCESTER	A	38%	Curbside	Curbside
ACTON	B	24%	Drop-off	Drop-off
ARLINGTON	B	21%	Curbside	Curbside
ATTLEBORO	B	22%	Curbside	Curbside
AYER	B	25%	Drop-off	Drop-off
BARRE	B	25%	Drop-off	Drop-off
BELMONT	B	22%	Curbside	Curbside
BERKLEY	B	25%	Curbside	Drop-off
BERNARDSTON	B	21%	Drop-off	Drop-off
BLACKSTONE	B	26%	Curbside	Drop-off
BLANDFORD	B	21%	Drop-off	Drop-off
BOLTON	B	20%	Drop-off	Drop-off
BRAINTREE	B	21%	Curbside	Both
BREWSTER	B	20%	Drop-off	Drop-off
BURLINGTON	B	24%	Curbside	Curbside
CAMBRIDGE	B	25%	Curbside	Both
DARTMOUTH	B	21%	Curbside	Both
DEERFIELD	B	21%	Drop-off	Drop-off
DUDLEY	B	24%	Drop-off	Drop-off
EAST BROOKFIELD	B	21%	Curbside	Curbside
EAST LONGMEADOW	B	23%	Curbside	Curbside
EGREMONT	B	23%	Drop-off	Drop-off
ESSEX	B	26%	Drop-off	Drop-off
FALMOUTH	B	23%	Curbside	Both
FRAMINGHAM	B	28%	Curbside	Both
FREETOWN	B	27%	Curbside	Drop-off
HAMPDEN	B	27%	Drop-off	Drop-off
HARVARD	B	26%	Drop-off	Drop-off
HEATH	B	29%	Drop-off	Drop-off
HOLLISTON	B	23%	Curbside	Both
HOPEDALE	B	25%	Curbside	Curbside
HUNTINGTON	B	27%	Drop-off	Drop-off
LAKEVILLE	B	24%	Drop-off	Drop-off
LEYDEN	B	21%	Drop-off	Drop-off
LINCOLN	B	22%	Drop-off	Drop-off
LITTLETON	B	21%	Drop-off	Drop-off
MARSHFIELD	B	20%	Curbside	Both
MEDWAY	B	20%	Curbside	Both
MELROSE	B	22%	Curbside	Both
MIDDLEBOROUGH	B	20%	Curbside	Both
MONTAGUE	B	27%	Curbside	Curbside
MONTEREY	B	26%	Drop-off	Drop-off
MONTGOMERY	B	20%	Curbside	Curbside
MOUNT WASHINGTON	B	23%	Drop-off	Drop-off

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	 Recycling
NEW SALEM	B	23%	Drop-off	Drop-off
NORTHAMPTON	B	29%	Drop-off	Drop-off
OAK BLUFFS	B	24%	Curbside	Drop-off
PAXTON	B	26%	Curbside	Curbside
PITTSFIELD	B	22%	Curbside	Curbside
PLYMPTON	B	20%	Drop-off	Drop-off
QUINCY	B	28%	Curbside	Both
ROWE	B	23%	Drop-off	Drop-off
RUSSELL	B	28%	Drop-off	Drop-off
SANDWICH	B	24%	Drop-off	Drop-off
SHARON	B	21%	Curbside	Both
SHEFFIELD	B	22%	Drop-off	Drop-off
SHUTESBURY	B	24%	Drop-off	Drop-off
SOMERSET	B	29%	Curbside	Both
SOUTH HADLEY	B	28%	Curbside	Curbside
SOUTHBRIDGE	B	29%	Curbside	Curbside
STONEHAM	B	23%	Curbside	Both
STOUGHTON	B	24%	Curbside	Both
SUDBURY	B	20%	Drop-off	Drop-off
SUNDERLAND	B	29%	Curbside	Curbside
SWAMPSCOTT	B	22%	Both	Both
TISBURY	B	24%	Curbside	Both
TOLLAND	B	28%	Drop-off	Drop-off
WALPOLE	B	25%	Curbside	Both
WARE	B	20%	Drop-off	Drop-off
WEST SPRINGFIELD	B	21%	Curbside	Curbside
WESTBOROUGH	B	27%	Drop-off	Drop-off
WESTFORD	B	22%	Curbside	Both
WESTON	B	24%	Drop-off	Drop-off
WEYMOUTH	B	23%	Curbside	Curbside
WILBRAHAM	B	27%	Drop-off	Drop-off
WILLIAMSBURG	B	21%	Drop-off	Drop-off
WORTHINGTON	B	27%	Drop-off	Drop-off
ABINGTON	C	18%	Curbside	Curbside
ADAMS	C	13%	Drop-off	Drop-off
ASHBURNHAM	C	16%	Curbside	Both
ASHBY	C	13%	Curbside	Both
AUBURN	C	17%	Curbside	Both
BECKET	C	19%	Drop-off	Drop-off
BELLINGHAM	C	13%	Curbside	Both
BILLERICA	C	11%	Curbside	Both
BOURNE	C	10%	Curbside	Both
CANTON	C	16%	Curbside	Both
CHATHAM	C	11%	Drop-off	Drop-off
CHELMSFORD	C	17%	Curbside	Both
CHESHIRE	C	13%	Drop-off	Drop-off
CHICOPEE	C	16%	Both	Both
CLARKSBURG	C	13%	Drop-off	Drop-off
CLINTON	C	14%	Curbside	Drop-off
COLRAIN	C	16%	Drop-off	Drop-off
CUMMINGTON	C	19%	Drop-off	Drop-off
DALTON	C	16%	Drop-off	Drop-off
DANVERS	C	12%	Curbside	Drop-off
DENNIS	C	17%	Drop-off	Drop-off
DOVER	C	12%	Drop-off	Drop-off
DUXBURY	C	18%	Drop-off	Drop-off
EASTHAM	C	13%	Drop-off	Drop-off
EASTHAMPTON	C	17%	Curbside	Curbside

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	Recycling
EASTON	C	12%	Drop-off	Drop-off
FAIRHAVEN	C	16%	Curbside	Both
FITCHBURG	C	14%	Curbside	Both
FLORIDA	C	13%	Drop-off	Drop-off
FOXBOROUGH	C	16%	Curbside	Both
FRANKLIN	C	12%	Curbside	Both
GLOUCESTER	C	18%	Curbside	Both
GRAFTON	C	18%	Curbside	Drop-off
GRANBY	C	16%	Drop-off	Drop-off
GREAT BARRINGTON	C	16%	Drop-off	Drop-off
GREENFIELD	C	19%	Curbside	Curbside
HANCOCK	C	13%	Drop-off	Drop-off
HARDWICK	C	18%	Drop-off	Drop-off
HARWICH	C	16%	Drop-off	Drop-off
HAVERHILL	C	17%	Curbside	Drop-off
HINSDALE	C	13%	Drop-off	Drop-off
HOLBROOK	C	10%	Curbside	Drop-off
HOLDEN	C	12%	Curbside	Both
HOLYOKE	C	14%	Both	Both
HOPKINTON	C	11%	Drop-off	Drop-off
KINGSTON	C	13%	Drop-off	Drop-off
LANESBOROUGH	C	13%	Curbside	Curbside
LEE	C	18%	Drop-off	Drop-off
LENOX	C	14%	Curbside	Curbside
LEOMINSTER	C	17%	Curbside	Both
LOWELL	C	16%	Curbside	Both
LUDLOW	C	15%	Curbside	Curbside
LYNN	C	12%	Curbside	Drop-off
MALDEN	C	12%	Curbside	Curbside
MANCHESTER	C	19%	Both	Curbside
MANSFIELD	C	10%	Curbside	Both
MARBLEHEAD	C	17%	Both	Both
MARION	C	13%	Curbside	Both
MARLBOROUGH	C	13%	Curbside	Drop-off
MASHPEE	C	17%	Drop-off	Drop-off
MATTAPOISETT	C	17%	Drop-off	Drop-off
MEDFIELD	C	17%	Drop-off	Drop-off
MIDDLEFIELD	C	16%	Drop-off	Drop-off
MIDDLETON	C	17%	Drop-off	Drop-off
MILFORD	C	14%	Curbside	Both
MILLBURY	C	10%	Curbside	Drop-off
MONSON	C	16%	Curbside	Curbside
NAHANT	C	16%	Curbside	Both
NATICK	C	18%	Curbside	Both
NEW ASHFORD	C	13%	Drop-off	Drop-off
NEW BEDFORD	C	12%	Curbside	Both
NEW MARLBOROUGH	C	16%	Drop-off	Drop-off
NEWBURYPORT	C	16%	Curbside	Both
NORTH ADAMS	C	14%	Drop-off	Drop-off
NORTH READING	C	19%	Curbside	Drop-off
NORTHBOROUGH	C	15%	Curbside	Both
NORTHBRIDGE	C	16%	Curbside	Drop-off
NORTHFIELD	C	12%	Drop-off	Drop-off
NORWELL	C	13%	Curbside	Both
NORWOOD	C	18%	Curbside	Both
ORLEANS	C	14%	Drop-off	Drop-off
OTIS	C	19%	Drop-off	Drop-off
PEABODY	C	11%	Curbside	Both

Town	Grade A>30. B>20. C>10. D>5. F<5. I-Incomplete	Recycling Rate	How it's collected Trash	 Recycling
PEMBROKE	C	18%	Curbside	Drop-off
PERU	C	13%	Drop-off	Drop-off
PETERSHAM	C	13%	Drop-off	Drop-off
PROVINCETOWN	C	13%	Curbside	Both
READING	C	13%	Curbside	Both
REVERE	C	18%	Curbside	Both
SALEM	C	19%	Curbside	Curbside
SAVOY	C	13%	Drop-off	Drop-off
SHELBURNE	C	19%	Drop-off	Drop-off
SHERBORN	C	10%	Drop-off	Drop-off
SHREWSBURY	C	18%	Curbside	Curbside
SOMERVILLE	C	14%	Curbside	Both
SOUTHWICK	C	13%	Drop-off	Drop-off
SPRINGFIELD	C	14%	Curbside	Curbside
STERLING	C	19%	Curbside	Both
SWANSEA	C	16%	Curbside	Curbside
TAUNTON	C	16%	Curbside	Both
TEWKSBURY	C	17%	Curbside	Both
TOPSFIELD	C	12%	Curbside	Drop-off
TRURO	C	14%	Drop-off	Drop-off
TYNGSBOROUGH	C	14%	Curbside	Drop-off
UPTON	C	17%	Drop-off	Drop-off
WALTHAM	C	14%	Curbside	Both
WATERTOWN	C	10%	Curbside	Both
WELLFLEET	C	10%	Drop-off	Drop-off
WEST BRIDGEWATER	C	10%	Drop-off	Drop-off
WEST NEWBURY	C	14%	Curbside	Drop-off
WEST STOCKBRIDGE	C	17%	Drop-off	Drop-off
WESTFIELD	C	18%	Curbside	Curbside
WESTHAMPTON	C	18%	Drop-off	Drop-off
WESTPORT	C	13%	Drop-off	Drop-off
WESTWOOD	C	19%	Curbside	Drop-off
WHITMAN	C	15%	Curbside	Both
WILMINGTON	C	14%	Curbside	Both
WINCHENDON	C	10%	Drop-off	Drop-off
WINCHESTER	C	17%	Curbside	Drop-off
WINDSOR	C	13%	Drop-off	Drop-off
WINTHROP	C	16%	Curbside	Curbside
WRENTHAM	C	15%	Curbside	Curbside
BARNSTABLE	D	7%	Drop-off	Drop-off
BOXBOROUGH	D	9%	Drop-off	Drop-off
BROCKTON	D	7%	Curbside	Drop-off
DRACUT	D	8%	Curbside	Drop-off
GARDNER	D	6%	Curbside	Drop-off
HANSON	D	8%	Drop-off	Drop-off
LAWRENCE	D	7%	Curbside	Curbside
MEDFORD	D	8%	Both	Both
METHUEN	D	8%	Curbside	Curbside
MILLVILLE	D	6%	Curbside	Curbside
NEW BRAINTREE	D	7%	Drop-off	Drop-off
PELHAM	D	5%	Drop-off	Drop-off
PEPPERELL	D	8%	Drop-off	Drop-off
PLAINVILLE	D	8%	Curbside	Both
RICHMOND	D	6%	Curbside	Curbside
SAUGUS	D	7%	Curbside	Drop-off
SCITUATE	D	7%	Drop-off	Drop-off
SHIRLEY	D	9%	Curbside	Drop-off
WALES	D	7%	Drop-off	Drop-off

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	Recycling
WARREN	D	6%	Drop-off	Drop-off
WOBURN	D	8%	Curbside	Both
YARMOUTH	D	6%	Drop-off	Drop-off
ACUSHNET	F	2%	Curbside	Drop-off
EVERETT	F	2%	Curbside	Both
FALL RIVER	F	4%	Curbside	Drop-off
PALMER	F	2%	Drop-off	Drop-off
PLYMOUTH	F	3%	Drop-off	Drop-off
ROCKLAND	F	1%	Curbside	Drop-off
SALISBURY	F	4%	Drop-off	Drop-off
AMESBURY	I	NA	Curbside	Curbside
ASHLAND	I	NA	Curbside	Curbside
ATHOL	I	NA		
AVON	I	NA	Curbside	Both
BERLIN	I	NA	Drop-off	Drop-off
BOSTON	I	NA	Curbside	Both
BOYLSTON	I	NA		
BRIDGEWATER	I	NA	Curbside	Drop-off
BROOKFIELD	I	NA	Drop-off	Drop-off
CARVER	I	NA	Private	Drop-off
CHARLTON	I	NA		
CHELSEA	I	NA	Curbside	Curbside
DEDHAM	I	NA		
DIGHTON	I	NA	Curbside	Both
DOUGLAS	I	NA	Drop-off	Drop-off
DUNSTABLE	I	NA	Curbside	Both
EAST BRIDGEWATER	I	NA	Curbside	Drop-off
GEORGETOWN	I	NA	Drop-off	Drop-off
GOSNOLD	I	NA	Curbside	Both
GROTON	I	NA	Curbside	Drop-off
GROVELAND	I	NA	Curbside	Curbside
HAMILTON	I	NA	Curbside	Curbside
HANOVER	I	NA	Drop-off	Drop-off
HOLLAND	I	NA		Drop-off
HUBBARDSTON	I	NA	Curbside	Drop-off
HUDSON	I	NA	Private	Drop-off
HULL	I	NA	Private	Drop-off
LANCASTER	I	NA	Curbside	Drop-off
LEICESTER	I	NA	Curbside	Drop-off
LUNENBURG	I	NA		
LYNNFIELD	I	NA	Curbside	Drop-off
MENDON	I	NA	Curbside	Curbside
MERRIMAC	I	NA	Drop-off	Drop-off
MILLIS	I	NA	Drop-off	Drop-off
MONROE	I	NA	Curbside	Curbside
NANTUCKET	I	NA	Drop-off	Drop-off
NEWBURY	I	NA	Drop-off	Drop-off
NORTH ATTLEBOROUGH	I	NA	Curbside	Both
NORTH BROOKFIELD	I	NA	Curbside	Drop-off
NORTON	I	NA	Curbside	Curbside
OAKHAM	I	NA	Curbside	Drop-off
OXFORD	I	NA		Curbside
PHILLIPSTON	I	NA	Drop-off	Drop-off
PRINCETON	I	NA	Curbside	Curbside
RANDOLPH	I	NA	Curbside	Both
ROCHESTER	I	NA	Curbside	Curbside
ROWLEY	I	NA	Private	Drop-off
ROYALSTON	I	NA	Drop-off	Drop-off

Town	Grade A>30, B>20, C>10, D>5, F<5, I-Incomplete	Recycling Rate	How it's collected Trash	Recycling
RUTLAND	I	NA		
SANDISFIELD	I	NA		
SOUTHBOROUGH	I	NA		
SPENCER	I	NA	Drop-off	Drop-off
STOW	I	NA	Drop-off	Drop-off
SUTTON	I	NA	Drop-off	Drop-off
TEMPLETON	I	NA	Drop-off	Drop-off
TYRINGHAM	I	NA	Drop-off	Drop-off
UXBRIDGE	I	NA	Private	
WAREHAM	I	NA	Private	Drop-off
WEBSTER	I	NA	Drop-off	Drop-off
WENHAM	I	NA	Curbside	Both
WEST BOYLSTON	I	NA	Curbside	Curbside
WEST BROOKFIELD	I	NA	Drop-off	Drop-off
WESTMINSTER	I	NA	Curbside	Both

Indicates towns whose recycling rate changed from the first issue of this report card.

Table E-2: Count of grades by type of trash program

Grade	Blank	Both	Curbside	Drop-off	Private	Grand total
A	0	1	21	38	1	61
B	0	1	38	37	0	76
C	0	4	69	49	0	122
D	0	1	11	10	0	22
F	0	0	4	3	0	7
I	10	0	29	18	6	63
Grand Total	10	7	172	155	7	351

Table E-3: Count of grades by type of recycling program

Grade	Blank	Both	Curbside	Drop-off	Grand total
A	0	13	7	41	61
B	0	19	16	41	76
C	0	41	16	65	122
D	0	3	4	15	22
F	0	1	0	6	7
I	9	9	12	33	63
Grand Total	9	86	55	201	351

Table E-4: Average recycling rate by grade

Grade	Total
A	37%
B	24%
C	15%
D	7%
F	3%

Table E-5: Average recycling rate by type of recycling program

Grade	Both	Curbside	Drop-off	Grand Total
A	35%	38%	37%	37%
B	23%	24%	24%	24%
C	15%	16%	15%	15%
D	8%	7%	7%	7%
F	2%	-	3%	3%

Table E-6: Average recycling rate by type of trash program

Grade	Both	Curbside	Drop-off	Private	Grand Total
A	40%	36%	37%	41%	37%
B	22%	24%	24%	-	24%
C	17%	15%	15%	-	15%
D	8%	7%	7%	-	7%
F	-	2%	3%	-	3%

Appendix F

Landfill Facilities

Table F-1: Massachusetts Active Landfills, 1994 Waste Accepted, and Permitted Capacity (1996-2000)

ID	Town	Own[1]	Regional[2]	Liner Status[3]	1994 Waste Accepted[4]	% MSW Permitted[4]	Annual Tonnage[5]	Close Date[6]	Permitted Capacity[7] 1996	1997	1998	1999	2000
SL0004.001	ADAMS	M	N	U	8,200	100%	-	31-Dec-95	-	-	-	-	-
SL0008.002	AMHERST	M	Y	L	14,586	100%	30,888	28-Feb-00	30,888	30,888	30,888	30,888	5,148
SL0011.002	ASHBURNHAM	M	N	U	1,800	100%	1,800	31-Dec-98	1,800	1,800	1,800	-	-
SL0012.002	ASHBY	M	N	U	780	100%	780	31-Dec-98	780	780	780	-	-
SL0016.001	ATTLEBORO	P	N	U	40,560	100%	-	31-Dec-94	-	-	-	-	-
SL0020.001	BARNSTABLE	M	N	U	19,510	0%	19,510	30-May-96	8,129	-	-	-	-
SL0021.002	BARRE	P	N	L	97,499	50%	93,600	31-Mar-97	93,600	23,400	-	-	-
SL0029.001	BERNARDSTON	M	Y	U	2,000	100%	2,000	31-Dec-98	2,000	2,000	2,000	-	-
SL0032.001	BLACKSTONE	M	N	U	-	100%	10,192	31-Dec-98	10,192	10,192	10,192	-	-
SL0034.001	BOLTON	M	N	U	1,330	100%	1,330	31-Dec-98	1,330	1,330	1,330	-	-
SL0036.004	BOURNE	M	N	L	27,000	100%	42,340	31-Dec-00	42,340	42,340	42,340	42,340	42,340
SL0038.001	BOXFORD	M	N	U	1,925	100%	1,925	1-Jul-98	1,925	1,925	963	-	-
SL0041.001	BREWSTER	M	N	U	1,718	100%	-	31-Dec-95	-	-	-	-	-
SL0045.001	BROOKFIELD	M	N	U	1,500	100%	1,500	30-Jul-96	875	-	-	-	-
SL0047.001	BUCKLAND	M	N	U	1,735	100%	1,735	31-Jul-96	1,012	-	-	-	-
SL0052.004	CARVER	M	N	U	21,688	100%	-	31-Dec-94	-	-	-	-	-
SL0054.002	CHARLTON	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0061.002	CHICOPEE	P	N	L	170,980	100%	156,000	30-Apr-00	156,000	156,000	156,000	156,000	52,000
SL0062.001	CHILMARK	M	N	U	2,000	0%	2,000	31-Dec-98	2,000	2,000	2,000	-	-
SL0063.001	CLARKSBURG	M	N	U	-	100%	2,548	31-Dec-98	2,548	2,548	2,548	-	-
DL0065.002	COHASSET	P	N	L	41,202	0%	75,946	30-May-96	31,644	-	-	-	-
SL0066.004	COLRAIN	M	N	U	214	100%	-	1-Jul-95	-	-	-	-	-
SL0067.001	CONCORD	M	N	L	3,218	100%	-	31-Dec-94	-	-	-	-	-
SL0070.002	DALTON	P	N	U	606	100%	-	31-Dec-94	-	-	-	-	-
SL0072.004	DARTMOUTH	M	N	U	12,945	100%	-	31-Dec-94	-	-	-	-	-
SL0072.003	DARTMOUTH	M	Y	L	-	100%	115,000	31-Dec-00	126,000	115,000	115,000	115,000	115,000
SL0074.001	DEERFIELD	M	N	U	14,557	100%	14,557	31-Dec-98	14,557	14,557	14,557	-	-

ID	Town	Own[1]	Regional[2]	Liner Status[3]	1994 Waste Accepted[4]	% MSW Permitted[4]	Annual Tonnage[5]	Close Date[6]	Permitted Capacity[7] 1996	1997	1998	1999	2000
SL0075.001	DENNIS	M	N	U	-	0%	3,900	30-Sep-98	3,900	3,900	2,925	-	-
SL0076.001	DIGHTON	M	N	U	3,600	100%	-	31-Dec-95	-	-	-	-	-
SL0080.001	DUDLEY	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0083.001	EAST BRIDGEWATER	M	N	U	3,500	100%	-	31-Dec-94	-	-	-	-	-
SL0083.003	EAST BRIDGEWATER	M	N	U	3,500	100%	390,000	30-Jun-96	195,000	-	-	-	-
SL0088.001	EASTON	M	N	U	2,400	100%	2,400	31-Dec-98	2,400	2,400	2,400	-	-
SL0089.003	EDGARTOWN	M	N	U	1,500	100%	-	31-Dec-95	-	-	-	-	-
SL0094.001	FAIRHAVEN	M	N	L	32,975	75%	122,928	31-Dec-06	122,928	122,928	122,928	122,928	122,928
SL0095.002	FALL RIVER	P	N	L	337,835	100%	-	31-Dec-95	-	-	-	-	-
SL0096.001	FALMOUTH	M	N	U	5,040	0%	6,000	30-Oct-98	6,000	6,000	5,000	-	-
SL0099.001	FOXBOROUGH	M	N	U	5,461	100%	5,461	30-Apr-96	1,820	-	-	-	-
SL0102.003	FREETOWN	M	N	U	-	100%	-	31-Dec-95	-	-	-	-	-
SL0103.002	GARDNER	M	N	U	14,750	100%	14,750	31-Dec-98	14,750	14,750	14,750	-	-
SL0109.002	GOSNOLD	M	N	U	30	100%	-	31-Dec-95	-	-	-	-	-
SL0111.001	GRANBY	P	N	L	123,748	67%	146,000	1-Jul-97	146,000	73,000	-	-	-
SL0113.002	GREAT BARRINGTON	M	N	U	5,457	100%	5,457	30-Jun-96	2,729	-	-	-	-
SL0114.001	GREENFIELD	M	N	L	4,809	0%	10,296	30-Nov-99	10,296	10,296	10,296	9,438	-
SL0120.002	HAMPDEN	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0124.001	HARDWICK	P	N	L	30,071	7%	93,600	31-Dec-97	93,600	93,600	-	-	-
SL0126.001	HARWICH	M	N	U	-	100%	4,188	31-Dec-98	4,188	4,188	4,188	-	-
SL0131.001	HINGHAM	M	N	U	9,476	100%	9,476	31-Dec-98	9,476	9,476	9,476	-	-
SL0133.002	HOLBROOK	M	N	U	10,000	100%	-	31-Dec-95	-	-	-	-	-
SL0141.002	HUDSON	P	N	L	22,762	100%	19,344	31-Dec-99	19,344	19,344	19,344	19,344	-
SL0142.002	HULL	M	N	L	1,125	0%	1,125	31-Dec-01	1,125	1,125	1,125	1,125	1,125
SL0145.001	KINGSTON	M	N	U	320	0%	320	31-Dec-98	320	320	320	-	-
SL0146.001	LAKEVILLE	M	N	U	-	100%	-	31-Dec-95	-	-	-	-	-
SL0150.001	LEE	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0162.001	LUNENBURG	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0166.001	MANCHESTER	M	N	U	-	0%	-	31-Dec-98	-	-	-	-	-
SL0171.004	MARSHFIELD	M	N	U	19,851	100%	19,851	31-Dec-98	19,851	19,851	19,851	-	-
SL0172.001	MASHPEE	M	N	U	-	0%	1,300	31-Dec-98	1,300	1,300	1,300	-	-
SL0173.003	MATTAPOISETT	M	N	U	18,000	100%	18,000	30-Jul-98	18,000	18,000	10,500	-	-
SL0180.003	MERRIMAC	M	N	U	-	100%	30,888	1-Jul-97	30,888	15,444	-	-	-

ID	Town	Own[1]	Regional[2]	Liner Status[3]	1994 Waste Accepted[4]	% MSW Permitted[4]	Annual Tonnage[5]	Close Date[6]	Permitted Capacity[7] 1996	1997	1998	1999	2000
SL0182.002	MIDDLEBOROUGH	M	N	L	5,500	100%	9,620	31-Dec-99	9,620	9,620	9,620	9,620	-
SL0184.002	MIDDLETON	M	N	U	5,000	100%	-	31-Dec-95	-	-	-	-	-
SL0189.001	MILTON	M	N	U	17,000	100%	-	31-Dec-95	-	-	-	-	-
SL0192.001	MONTAGUE	M	N	U	16,288	100%	16,288	31-Dec-97	16,288	16,288	-	-	-
SL0197.001	NANTUCKET	M	N	U	15,624	100%	15,624	31-Dec-98	15,624	15,624	15,624	-	-
SL0199.001	NEEDHAM	M	N	U	9,610	100%	9,610	31-Dec-98	9,610	9,610	9,610	-	-
SL0201.001	NEW BEDFORD	M	N	U	10,415	100%	-	31-Dec-95	-	-	-	-	-
SL0205.002	NEWBURY	M	N	U	2,900	100%	2,900	31-Dec-98	2,900	2,900	2,900	-	-
SL0207.005	NEWTON	M	N	U	-	0%	-	31-Dec-98	-	-	-	-	-
SL0211.001	N. ATTLEBOROUGH	M	N	U	24,445	100%	30,888	28-Feb-98	30,888	30,888	5,148	-	-
SL0212.001	NORTH BROOKFIELD	M	N	U	2,000	100%	2,000	1-Apr-96	500	-	-	-	-
SL0214.001	NORTHAMPTON	M	Y	L	60,125	100%	50,000	31-Dec-01	50,000	50,000	50,000	50,000	50,000
SL0220.002	NORWOOD	M	N	U	-	0%	-	1-Jul-97	-	-	-	-	-
SL0221.001	OAK BLUFFS	M	N	U	865	100%	865	31-Dec-96	865	-	-	-	-
SL0223.003	ORANGE	M	Y	U	5,028	100%	5,028	30-Jun-96	2,514	-	-	-	-
SL0227.001	PALMER	M	Y	U	10,082	100%	10,082	30-Jul-96	5,881	-	-	-	-
SL0229.001	PEABODY	P	N	L	49,667	100%	-	31-Dec-95	-	-	-	-	-
SL0232.001	PEPPERELL	M	N	U	5,000	100%	-	31-Dec-95	-	-	-	-	-
SL0238.002	PLAINVILLE	P	N	L	469,329	100%	-	31-Dec-95	-	-	-	-	-
SL0239.001	PLYMOUTH	M	N	U	10,239	100%	10,239	30-Mar-96	2,560	-	-	-	-
SL0242.002	PROVINCETOWN	M	N	U	-	100%	-	31-Dec-94	-	-	-	-	-
SL0244.001	RANDOLPH	P	N	U	30,675	100%	-	31-Dec-95	-	-	-	-	-
SL0245.001	RAYNHAM	M	N	U	11,001	100%	11,001	31-Dec-98	11,001	11,001	11,001	-	-
SL0247.003	REHOBOTH	M	N	U	1,560	100%	-	1-Jul-95	-	-	-	-	-
SL0251.001	ROCKLAND	M	N	U	4,750	100%	-	1-Jul-95	-	-	-	-	-
SL0255.001	ROYALSTON	M	N	U	150	100%	150	31-Dec-98	150	150	150	-	-
SL0259.001	SALISBURY	M	N	U	2,000	100%	2,000	1-Jul-97	2,000	1,000	-	-	-
SL0264.001	SCITUATE	M	N	U	11,880	100%	11,880	31-Dec-98	11,880	11,880	11,880	-	-
SL0270.001	SHIRLEY	M	N	U	2,324	100%	2,324	31-Dec-98	2,324	2,324	2,324	-	-
SL0275.001	SOUTH HADLEY	M	N	U	29,122	100%	-	30-Nov-95	-	-	-	-	-
SL0276.001	SOUTHAMPTON	M	N	U	4,250	100%	4,250	30-Jul-96	2,479	-	-	-	-
SL0278.002	SOUTHBRIDGE	M	N	L	2,682	100%	4,160	31-Dec-98	4,160	4,160	4,160	-	-
SL0287.001	STURBRIDGE	M	N	L	360	100%	360	31-Dec-00	360	360	360	360	360

ID	Town	Own[1]	Regional[2]	Liner Status[3]	1994 Waste Accepted[4]	% MSW Permitted[4]	Annual Tonnage[5]	Close Date[6]	Permitted Capacity[7] 1996	1997	1998	1999	2000
SL0288.001	SUDBURY	M	N	L	7,554	100%	7,554	30-Jan-96	630	-	-	-	-
SL0290.002	SUTTON	M	N	U	2,500	100%	2,500	1-Apr-96	625	-	-	-	-
SL0293.002	TAUNTON	M	Y	U	84,826	56%	112,320	30-Sep-97	112,320	84,240	-	-	-
SL0294.003	TEMPLETON	M	Y	U	-	100%	-	31-Dec-95	-	-	-	-	-
SL0296.002	TISBURY	M	N	U	-	100%	120	31-Dec-96	60	-	-	-	-
SL0298.002	TOPSFIELD	M	N	U	2,500	100%	2,500	1-Jul-98	2,500	2,500	1,250	-	-
SL0299.002	TOWNSEND	M	N	L	3,900	100%	3,900	31-Dec-97	3,900	3,900	-	-	-
SL0300.001	TRURO	M	N	U	-	0%	-	31-Dec-98	-	-	-	-	-
SL0309.001	WARE	M	N	U	2,500	100%	2,500	31-Dec-96	2,500	-	-	-	-
SL0311.001	WARREN	M	N	L	500	100%	2,000	31-Dec-00	2,000	2,000	2,000	2,000	2,000
SL0312.001	WARWICK	M	N	U	-	100%	600	31-Dec-98	600	600	600	-	-
SL0315.004	WAYLAND	M	N	L	3,238	100%	3,238	31-Dec-10	3,238	3,238	3,238	3,238	3,238
DL0319.003	WENDELL	P	N	L	24,160	0%	25,740	31-Dec-96	25,740	-	-	-	-
SL0323.001	WEST BROOKFIELD	M	N	U	-	100%	2,808	1-Oct-96	2,106	-	-	-	-
SL0327.001	WEST TISBURY	M	N	U	1,100	0%	1,100	30-Jun-96	550	-	-	-	-
SL0329.001	WESTFIELD	M	N	U	-	100%	-	31-Dec-95	-	-	-	-	-
SL0331.001	WESTHAMPTON	M	N	U	-	100%	900	31-Dec-98	900	900	900	-	-
SL0332.001	WESTMINSTER	M	Y	L	178,465	100%	156,000	31-Dec-98	156,000	156,000	156,000	-	-
SL0334.002	WESTPORT	M	N	U	8,408	100%	-	31-Dec-95	-	-	-	-	-
SL0339.001	WILBRAHAM	M	N	U	14,360	100%	-	31-Dec-95	-	-	-	-	-
SL0343.001	WINCHENDON	M	N	U	7,800	100%	14,820	31-Dec-98	14,820	14,820	14,820	-	-
SL0348.007	WORCESTER	M	N	U	-	0%	21,600	31-Dec-96	21,600	-	-	-	-
SL0351.005	YARMOUTH	M	N	U	20,326	100%	-	31-Dec-95	-	-	-	-	-

[1] Ownership is either (M)unicipal or (P)rivate
[2] A facility is either a regional facility (Y)es or is not (N)o.
[3] A facility is either (L)ined or (U)nlined.
[4] The percentage of total permitted tonnage that can be MSW, based on permit, authorization, or consent order.
[5] The total amount of waste that the facility can accept, baed on permit, authorization, consent order, or historical precident.
[6] The date that the Department expects the facility to cease accepting waste, based on permit, authorization, or consent order.
[7] The total tonnage of waste that the facility can accept in each of the years. Value is a function of the Annual Tonnage and the Close Date, and is calculated to the day.

Appendix G

Combustion Facilities

Table G-1: Massachusetts Combustion Facilities, 1994 Waste Accepted, and Permitted Capacity (1996-2000)

SiteID	Type[1]	Town	Facility Name	1994 Waste Accepted Tons/yr	Projected Waste Accepted Tons/yr	Pre-burn metals tons/yr	Bypass tons/yr	Total MSW Burned tons/yr	Post Burn Metal tons/yr
RR0005.005	MB	Agawam	SRI / Springfield	126,704	131,400	141	-	131,259	3,600
MI0095.006	MI	Fall River	Fall River Municipal Incinerator	53,000	52,000	-	650	51,350	-
RR0128.008	MB	Haverill	Ogden Martin / Haverill	549,657	550,000	-	5,000	545,000	11,700
RR0149.007	RDF	Lawerence	Ogden Martin / Lawerence	251,833	252,000	30,000	31,000	191,000	-
RR0186.005	MB	Milbury	Wheelabrator / Millbury	478,723	490,000	-	-	490,000	2,950
RR0210.001	MB	North Andover	Wheelabrator / NESWC	423,683	440,000	-	-	440,000	10,000
RR0236.005	MB	Pittsfield	EAC / Pittsfield	73,634	78,500	838	-	77,662	1,600
RR0250.002	RDF	Rochester	Semass Partnership	959,277	964,752	14,471	32,229	918,052	27,013
RR0262.006	MB	Saugus	Wheelabrator / Saugus	420,128	440,000	-	-	440,000	19,710
RR0270.004	MB	Shirley	TIRU / Shirley	-	72,730	-	-	72,730	-
			TOTALS	3,336,639	3,471,382	45,450	68,879	3,357,053	76,573

[1]Ash generation can be calculated as a percentage of waste combusted. For refuse derived fuel (RDF) type facilities, 16% of original waste is ash, while for mass burn (MB) facilities, 25% of the original waste is left as ash.. The one municipal incinerator (MI) generated approximately 25% of final waste as ash.

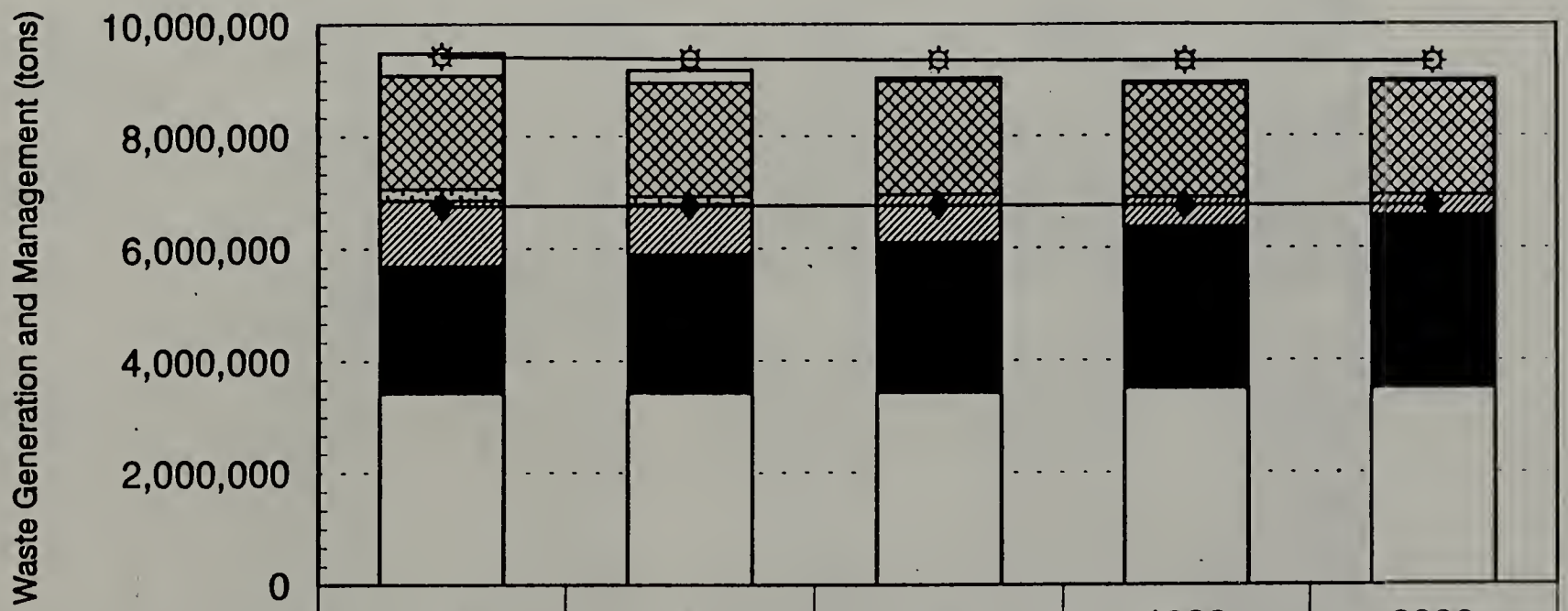
Appendix H

Projection Overview (1996-2000)

Table H-1: Projected waste generation, management and capacity shortfall or excess for 1996-2000 (in tons per year, except where noted)

	Year				
	1996	**1997**	**1998**	**1999**	**2000**
Total MSW Generation	**6,750,000**	**6,750,000**	**6,750,000**	**6,750,000**	**6,750,000**
C&D	2,420,000	2,420,000	2,420,000	2,420,000	2,420,000
Other	160,000	160,000	160,000	160,000	160,000
Biosolids	90,000	45,000	25,000	10,000	-
Total Non-MSW Generation	**2,670,000**	**2,625,000**	**2,605,000**	**2,590,000**	**2,580,000**
Total Generation	**9,420,000**	**9,375,000**	**9,355,000**	**9,340,000**	**9,330,000**
Combustion	3,398,652	3,398,652	3,398,652	3,471,382	3,471,382
MSW Recycling	2,295,000	2,497,500	2,700,000	2,902,500	3,105,000
MSW Landfill Capacity	1,159,667	887,043	852,220	520,518	361,814
Total MSW Management	**6,853,319**	**6,783,195**	**6,950,872**	**6,894,400**	**6,938,196**
Non-MSW Proc. and Recycling	2,020,000	2,020,000	2,020,000	2,020,000	2,020,000
Non-MSW Landfill Capacity	399,152	228,119	54,166	41,763	32,325
Codisposal	204,409	139,523	-	-	-
Total Non-MSW Management	**2,623,561**	**2,387,642**	**2,074,166**	**2,061,763**	**2,052,325**
Total Management	**9,476,880**	**9,170,837**	**9,025,038**	**8,956,163**	**8,990,521**
MSW Excess Capacity (Shortfall)	103,319	33,195	200,872	144,400	188,196
Total Excess Capacity (Shortfall)	56,880	(204,163)	(329,962)	(383,837)	(339,479)
Ton per day					
MSW Excess Capacity (Shortfall)	300	100	600	500	600
Total Excess Capacity (Shortfall)	200	-700	-1100	-1200	-1100

Figure H-1: MSW and Non-MSW waste generation and management projections for the years 1996-2000).



	1996	1997	1998	1999	2000
Non-MSW Landfill	399,152	228,119	54,166	41,763	32,325
Non-MSW Recycling	2,020,000	2,020,000	2,020,000	2,020,000	2,020,000
Codisposal	204,409	139,523	-	-	-
MSW Landfills	1,159,667	887,043	852,220	520,518	361,814
MSW Recycling	2,295,000	2,497,500	2,700,000	2,902,500	3,105,000
Combustion	3,398,652	3,398,652	3,398,652	3,471,382	3,471,382
Total MSW Generation	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000
Total Generation	9,420,000	9,375,000	9,355,000	9,340,000	9,330,000
MSW Excess or Shortfall (-)	103,319	33,195	200,872	144,400	188,196
Total Excess or Shortfall (-)	56,880	-204,163	-329,962	-383,837	-339,479

(Excess or shortfall capacity listed for MSW and Total system is the distance between the appropriate generation components and the generation lines)

Appendix I

Status Report on Cities and Towns

Table I-1: Massachusetts Cities and Towns, MSW generation rate, disposal information, solid waste user fee programs for 1994

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
ABINGTON	13,775	6,201	0.45 *	Spot Market:Private Hauler	unknown	Unknown			
ACTON	18,122	8,157	0.45 *	Combustion:North Andover	2005	Flat Rate	$100.00 / year		
ACUSHNET	9,575	4,310	0.45 *	Combustion:Semass	1996	Flat Rate	$1.25 / week or	$65.00 / year	
ADAMS	9,450	4,254	0.45 *	Unknown	na	Flat Rate	$12.00 / year		
AGAWAM	27,602	11,317	0.41	Combustion:Springfield	2013	No Fee			
ALFORD	424	191	0.45 *	Transfer Station	na	Flat Rate	$40.00 / year		
AMESBURY	15,232	6,857	0.45 *	Unknown	na	No Fee			
AMHERST	35,228	18,988	0.54	Regional Landfill:Amherst	na	Unit Based			
ANDOVER	29,093	13,096	0.45 *	Combustion:North Andover	2005	No Fee			
ARLINGTON	47,000	22,852	0.49	Combustion:North Andover	2005	No Fee			
ASHBURNHAM	5,667	2,551	0.45 *	Municipal Landfill	na	Unit Based	$1.00 / 15 gal. bag	$1.50 / 30 gal. bag	
ASHBY	2,971	1,337	0.45 *	Municipal Landfill	na	Flat Rate + Unit Based	$50.00 / year	$1.50 / 30 gal. bag	
ASHFIELD	1,775	799	0.45 *	Regional Landfill:Northampton	2004	Flat Rate or Unit Based	$1.00 / 33 gal. bag	or $25.00 / year for drop-off	
ASHLAND	12,502	5,626	0.45 *	Unknown	na	No Fee			
ATHOL	11,547	5,196	0.45 *	Unknown	na	Private			
ATTLEBORO	38,065	17,917	0.47	Combustion:Semass	1999	Flat Rate	$123.50 / year		
AUBURN	14,956	6,733	0.45 *	Combustion:Millbury	2008	Flat Rate	$13.00 / month		
AVON	4,658	2,097	0.45 *	Private Landfill:E Bridgewater	unknown	No Fee			
AYER	6,883	2,814	0.41	Combustion:Haverhill	1996	Flat Rate	$30.00 / year		
BARNSTABLE	54,044	24,328	0.45 *	Combustion:Semass	unknown	Flat Rate	$85.00 / year		
BARRE	4,756	2,141	0.45 *	Private Landfill:Barre	unknown	Flat Rate	$10.00 / two years		
BECKET	1,700	765	0.45 *	Transfer Station	1997	Flat Rate + Unit Based	$40.00 / year	$0.75 / 30 gal. bag	
BEDFORD	13,100	5,897	0.45 *	Combustion:North Andover	2005	Unknown			
BELCHERTOWN	11,175	5,030	0.45 *	Combustion:Springfield	unknown	Flat Rate + Unit Based	$30.00 / year	$0.80 / bag	
BELLINGHAM	15,189	6,453	0.42	Combustion:Semass	2011	Flat Rate	$168.00 / year		
BELMONT	24,574	11,062	0.45 *	Combustion:North Andover	2005	Flat Rate			
BERKLEY	4,427	1,993	0.45 *	Transfer Station	1994	No Fee			
BERLIN	2,311	1,040	0.45 *	Spot Market:Private Hauler	1994	Flat Rate	$55.00 / year		
BERNARDSTON	2,070	932	0.45 *	Municipal Landfill	na	Unit Based	$1.00 / bag		
BEVERLY	38,100	25,090	0.66	Combustion:Saugus	2005	No Fee			
BILLERICA	38,399	17,285	0.45 *	Combustion:Saugus	1995	No Fee			
BLACKSTONE	8,223	3,701	0.45 *	Municipal Landfill	na	Unknown			
BLANDFORD	1,251	563	0.45 *	Unknown	na	Unknown			
BOLTON	3,230	1,454	0.45 *	Municipal Landfill	na	Flat Rate	$100.00 / year		
BOSTON	582,107	262,037	0.45 *	Spot Market:5 Individual Vendors	1997	No Fee			
BOURNE	18,428	7,395	0.45 *	Municipal Landfill	na	Flat Rate	$20.00 / year		
BOXBOROUGH	3,445	1,551	0.45 *	Combustion:North Andover	2005	Flat Rate	$15.00 / year		

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
BOXFORD	6,580	2,962	0.45 *	Municipal Landfill	na	Unit Based	$1.00 / 32 gal. bag		
BOYLSTON	3,573	1,608	0.45 *	Unknown	na	Flat Rate	$5.00 / year		
BRAINTREE	34,295	15,438	0.45 *	Combustion:Semass	2015	?	$10.00 / year	$25.00 / day /resident	
BREWSTER	14,189	6,945	0.49	Combustion:Semass	2008	Flat Rate	$60.00 / year		
BRIDGEWATER	21,203	9,545	0.45 *	Unknown	na	No Fee			
BRIMFIELD	3,157	1,421	0.45 *	Spot Market:Private Hauler	1995	Unit Based	$1.00 / bag		
BROCKTON	91,404	41,146	0.45 *	Spot Market:Private Hauler	1996	Flat Rate	$110.00 / year		
BROOKFIELD	3,051	1,373	0.45 *	Municipal Landfill	na	Flat Rate	$50.00 / year		
BROOKLINE	53,898	24,262	0.45 *	Unknown	na	Flat Rate	$165.00 / year		
BUCKLAND	1,995	898	0.45 *	Municipal Landfill	na	Unit Based	$1.00 / bag		
BURLINGTON	23,372	10,521	0.45 *	Combustion:North Andover	2005	No Fee			
CAMBRIDGE	95,126	42,821	0.45 *	Transfer Station	1994	No Fee			
CANTON	18,909	6,656	0.47	Combustion:Semass	2011	No Fee			
CARLISLE	4,553	2,049	0.45 *	Combustion:North Andover	2005	Flat Rate	$10.00 / year		
CARVER	11,589	5,217	0.45 *	Combustion:Semass	2013	Unknown			
CHARLEMONT	1,307	589	0.45 *	Transfer Station	1995	Unit Based	$1.00 / 30 gal. bag		
CHARLTON	9,846	4,432	0.45 *	Unknown	na	Private			
CHATHAM	11,491	7,066	0.61	Combustion:Semass	2016	Flat Rate + Unit Based	$40.00 / year (trash)	$1.00 / bag	$1 / recycling sticker
CHELMSFORD	32,907	16,270	0.49	Transfer Station	1995	No Fee			
CHELSEA	27,859	12,541	0.45 *	Combustion:Saugus	unknown	Flat Rate	$152.50 / units 1-3 dwelling	$125.00 / units 4-6 dwelling	$600.00 / bording house
CHESHIRE	3,577	1,610	0.45 *	Private Landfill:Granby	1996	Flat Rate	$35.00 / year		
CHESTER	1,305	587	0.45 *	Transfer Station	1996	Flat Rate + Unit Based	$25.00 / year	$1.00 / bag	
CHESTERFIELD	1,236	556	0.45 *	Regional Landfill:Northampton	2004	Unit Based	$0.75 / 35 gal. bag	$1.50 / 30 gal. bag	
CHICOPEE	56,977	33,635	0.59	Private Landfill:Chicopee	2007	No Fee			
CHILMARK	1,707	768	0.45 *	Combustion:Semass	2008	Unit Based	$2.65 / 32 gal. bag	or $26.50 / for 10 coupons	
CLARKSBURG	1,768	796	0.45 *	Unknown	na	Unknown			
CLINTON	13,084	5,890	0.45 *	Private Landfill:Barre	na	Unit Based	$0.75 / bag		
COHASSET	7,341	3,304	0.45 *	Combustion:Semass	2002	Flat Rate	$65.00 / year		
COLRAIN	1,793	807	0.45 *	Municipal Landfill	na	Unit Based	$1.50 / 33 gal. bag	$0.75 / 16 gal. bag	
CONCORD	15,450	6,955	0.45 *	Municipal Landfill	na	Unit Based	$0.90 / 16 gal. bag	$1.75 / 44 gal. bag	
CONWAY	1,593	862	0.54	Private Landfill:Granby	unknown	No Fee			
CUMMINGTON	865	389	0.45 *	Regional Landfill:Northampton	2004	Flat Rate	$100.00 / year		
DALTON	7,029	3,164	0.45 *	Spot Market:Private Hauler	unknown	Flat Rate + Unit Based	$15.00 / year	$1.75 / 30 gal. bag	$1.00 / 15 gal. bag
DANVERS	24,407	14,474	0.59	Combustion:Haverhill	2020	Flat Rate	$10.00 / year		
DARTMOUTH	27,436	12,351	0.45 *	Municipal Landfill	na	Flat Rate	$25.00 / year for trucks	$15.00 / year for cars	
DEDHAM	23,887	10,753	0.45 *	Private Landfill:Plainville	unknown	No Fee			
DEERFIELD	5,079	2,286	0.45 *	Municipal Landfill	na	Flat Rate	$35.00 / year		
DENNIS	27,696	16,623	0.67	Combustion:Semass	2012	Flat Rate or Unit Based	$55.00 / year sticker	or $1 / bag without sticker	
DIGHTON	5,713	2,572	0.45 *	Municipal Landfill	na	Unit Based	$1.00 / 33 gal. bag		
DOUGLAS	5,549	2,496	0.45 *	Spot Market:Private Hauler	unknown	Flat Rate	$25.00 / year		
DOVER	5,056	2,276	0.45 *	Combustion:Millbury	2004	No Fee			
DRACUT	26,586	11,968	0.45 *	Combustion:North Andover	2005	No Fee			
DUDLEY	9,595	4,319	0.45 *	Unknown	na	Flat Rate	$30.00 / 6 months	$15.00 / 6 months (seniors)	
DUNSTABLE	2,363	1,064	0.45 *	Unknown	na	Unknown			

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
DUXBURY	14,266	6,422	0.45 *	Combustion:Semass	2001	Flat Rate	$60.00 / year	($70.00 / After July 1, 1995)	
EAST BRIDGEWATER	11,077	4,986	0.45 *	Private Landfill:E Bridgewater	unknown	No Fee			
EAST BROOKFIELD	2,016	803	0.40	Combustion:Millbury	2008	Flat Rate	$104.00 / year		
EAST LONGMEADOW	13,404	6,034	0.45 *	Combustion:Springfield	2004	No Fee			
EASTHAM	9,591	4,317	0.45 *	Combustion:Semass	2012	Flat Rate	$55.00 / year		
EASTHAMPTON	15,625	7,124	0.45 *	Regional Landfill:Northampton	2004	Private			
EASTON	20,064	10,953	0.55	Municipal Landfill	na	Flat Rate	$50.00 / year		
EDGARTOWN	10,678	4,807	0.45 *	Combustion:Semass	2008	Flat Rate	$100.00 / year per car		
EGREMONT	1,291	581	0.45 *	Unknown	na	Flat Rate	$100.00 / year		
ERVING	1,438	647	0.45 *	Regional Landfill:Orange	1995	No Fee			
ESSEX	3,241	1,459	0.45 *	Combustion:Haverhill	2004	Flat Rate	$10.00 / year sticker		
EVERETT	35,701	20,873	0.58	Combustion:Saugus	1995	No Fee			
FAIRHAVEN	16,066	7,143	0.44	Combustion:Semass	2016	Flat Rate	$5.00 / car/year		
FALL RIVER	91,379	41,134	0.45 *	Municipal Incinerator:Fall River	na	No Fee			
FALMOUTH	40,182	18,088	0.45 *	Combustion:Semass	unknown	Flat Rate	$65.00 / 3 years		
FITCHBURG	40,787	16,360	0.45 *	Regional Landfill:Westminster	2017	No Fee			
FLORIDA	750	338	0.45 *	Unknown	na	Flat Rate	$2.00 / year sticker		
FOXBOROUGH	15,061	7,152	0.47	Municipal Landfill	na	Flat Rate	$100.00 / year per unit	$200.00 / 2 family	
FRAMINGHAM	65,791	29,616	0.45 *	Transfer Station	2004	No Fee			
FRANKLIN	22,764	10,247	0.45 *	Combustion:Millbury	2007	Flat Rate	$172.00 / year		
FREETOWN	8,739	3,943	0.45	Combustion:Semass	unknown	Flat Rate	$10.00 / year	$1.50 / week	
GARDNER	20,123	9,058	0.45 *	Municipal Landfill	na	No Fee			
GAY HEAD	434	196	0.45 *	Combustion:Semass	2008	Flat Rate	$5.00 / year sticker	$4.00 / year sticker (seniors)	
GEORGETOWN	6,523	2,936	0.45 *	Transfer Station	na	Unit Based	$1 to $2 / bag		
GILL	1,592	717	0.45 *	Regional Landfill:Bernardston	1997	Unit Based	$1.00 / bag		
GLOUCESTER	29,224	13,155	0.45 *	Spot Market:Private Hauler	1996	Unit Based	$1.00 / bag		
GOSHEN	921	415	0.45 *	Regional Landfill:Northampton	2004	Flat Rate	$20.00 / year	$10.00 / seasonal only	$10.00 / seniors
GOSNOLD	84	38	0.45 *	Municipal Landfill	na	No Fee			
GRAFTON	13,077	5,887	0.45 *	Combustion:Millbury	2008	No Fee			
GRANBY	5,712	2,571	0.45 *	Private Landfill:Granby	unknown	Flat Rate	$6.00 / year		
GRANVILLE	1,490	671	0.45 *	Transfer Station:Granville	unknown	Unit Based	$60.00 / year 30 gal. bag	$25.00 / 52/ 5 gal. bags	
GREAT BARRINGTON	7,632	3,436	0.45 *	Municipal Landfill	na	Flat Rate	$130.00 / sticker		
GREENFIELD	18,507	7,495	0.40	Combustion:Springfield	2013	No Fee			
GROTON	7,694	3,554	0.45 *	Combustion:Haverhill	2010	Flat Rate	$30.00 / year		
GROVELAND	5,261	2,368	0.45 *	Unknown	na	No Fee			
HADLEY	4,210	1,895	0.45 *	Unknown	na	Flat Rate	$30.00 / year		
HALIFAX	6,676	3,006	0.45 *	Combustion:Semass	1995	Unit Based	$1.00 / bag	$0.60 / 15 gal. bag	
HAMILTON	7,367	3,325	0.45 *	Combustion:North Andover	2005	Unknown			
HAMPDEN	4,845	2,181	0.45 *	Spot Market:Private Hauler	1996	Unit Based	$0.50 / bag		
HANCOCK	622	280	0.45 *	Combustion:Pittsfield	unknown	Unknown			
HANOVER	11,696	5,355	0.45 *	Private Landfill:E Bridgewater	unknown	Private			
HANSON	9,161	4,124	0.45 *	Combustion:Semass	2008	Flat Rate	$100.00 / year		
HARDWICK	2,475	1,114	0.45 *	Private Landfill:Hardwick	na	Unit Based	$0.75 / bag		
HARVARD	12,674	5,705	0.45 *	Transfer Station:Harvard	unknown	Unit Based	$50.00 / year		

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
HARWICH	16,502	8,358	0.51	Combustion:Semass	unknown	Flat Rate	$40.00 / year		
HATFIELD	3,246	1,462	0.45 *	Regional Landfill:Northampton	2004	Flat Rate + Unit Based	$25.00 / year	$2.00 / bag	
HAVERHILL	53,000	26,635	0.50	Combustion:Haverhill	2001	No Fee			
HAWLEY	349	157	0.45 *	Unknown	na	Unit Based	$1.00 / 30 gal. bag		
HEATH	710	320	0.45 *	Combustion:Springfield	2013	Flat Rate	$25.00 / year		
HINGHAM	20,165	12,770	0.63	Municipal Landfill	na	No Fee			
HINSDALE	2,007	903	0.45 *	Combustion:Pittsfield	unknown	Flat Rate	$30.00 / year		
HOLBROOK	11,312	5,092	0.45 *	Municipal Landfill	na	Flat Rate	$1.00 / year		
HOLDEN	14,630	6,586	0.45 *	Unknown	na	Private			
HOLLAND	2,324	1,046	0.45 *	Unknown	na	Flat Rate	$25.00 / year		
HOLLISTON	13,279	6,449	0.49	Combustion:Millbury	1995	Flat Rate	$77.00 / year		
HOLYOKE	42,463	19,115	0.45 *	Private Landfill:Granby	1999	No Fee			
HOPEDALE	5,525	2,487	0.45 *	Combustion:Millbury	2008	No Fee			
HOPKINTON	9,701	4,367	0.45 *	Combustion:Millbury	2007	No Fee			
HUBBARDSTON	2,634	1,276	0.45 *	Unknown	na	No Fee			
HUDSON	17,792	8,009	0.45 *	Private Landfill:Hudson/Stow	na	Flat Rate	$10.00 / year		
HULL	10,262	4,619	0.45 *	Municipal Landfill	na	Private			
HUNTINGTON	2,031	914	0.45 *	Regional Landfill:Northampton	2004	Unit Based	$0.60 / 16 gal. bag		
IPSWICH	12,145	5,966	0.49	Combustion:Haverhill	1997	No Fee			
KINGSTON	9,155	5,183	0.57	Combustion:Semass	2020	Flat Rate	$25.00 / year		
LAKEVILLE	8,161	3,674	0.45 *	Combustion:Semass	unknown	Flat Rate	$25.00 / year		
LANCASTER	6,652	2,994	0.45 *	Spot Market:Private Hauler	unknown	No Fee			
LANESBOROUGH	3,156	1,421	0.45 *	Combustion:Pittsfield	unknown	Unknown			
LAWRENCE	67,802	30,521	0.45 *	Combustion:Haverhill	unknown	No Fee			
LEE	5,676	2,645	0.45 *	Combustion:Pittsfield	unknown	No Fee			
LEICESTER	10,272	4,624	0.45 *	Unknown	na	No Fee			
LENOX	5,096	2,294	0.45 *	Combustion:Pittsfield	unknown	Unknown			
LEOMINSTER	38,311	21,043	0.55	Transfer Station	1995	No Fee			
LEVERETT	1,826	822	0.45 *	Regional Landfill:Northampton	na	Flat Rate + Unit Based	$20.00 / year	$1.50 / 30 gal. bag	
LEXINGTON	29,135	16,364	0.56	Combustion:North Andover	2005	No Fee			
LEYDEN	722	325	0.45 *	Unknown	na	Private			
LINCOLN	7,882	3,548	0.45 *	Combustion:North Andover	2005	No Fee			
LITTLETON	7,259	3,377	0.47	Combustion:Haverhill	2005	Flat Rate	$100.00 / year		
LONGMEADOW	16,301	11,770	0.72	Combustion:Springfield	2008	No Fee			
LOWELL	102,389	46,091	0.45 *	Combustion:Haverhill	1995	Flat Rate	$72.00 / year		
LUDLOW	19,118	8,606	0.45 *	Combustion:Springfield	2004	Flat Rate	$20.00 / year for cars	$30.00 / year for trucks	
LUNENBURG	9,203	4,143	0.45 *	Unknown	na	Flat Rate	$40.00 / year		
LYNN	80,016	36,020	0.45 *	Combustion:Saugus	unknown	No Fee			
LYNNFIELD	11,313	5,092	0.45 *	Combustion:Haverhill	unknown	Flat Rate	$10.00 / year sticker		
MALDEN	53,884	25,203	0.47	Combustion:Saugus	1995	No Fee			
MANCHESTER	5,362	2,414	0.45 *	Combustion:North Andover	2005	Unit Based	$0.50 / 30 gal. bag		
MANSFIELD	16,782	7,548	0.45 *	Private Landfill:Plainville	unknown	No Fee			
MARBLEHEAD	19,895	8,956	0.45 *	Transfer Station	na	No Fee			
MARION	4,571	2,620	0.57	Combustion:Semass	2016	No Fee			

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
MARLBOROUGH	32,499	14,629	0.45 *	Unknown	na	Flat Rate	$5.00 / year		
MARSHFIELD	21,899	9,858	0.45 *	Municipal Landfill	na	Flat Rate	$198.00 / year		
MASHPEE	13,832	7,405	0.54	Combustion:Semass	2006	Flat Rate	$35.00 / year		
MATTAPOISETT	5,954	2,530	0.42	Combustion:Semass	unknown	No Fee			
MAYNARD	10,544	4,746	0.45 *	Combustion:Millbury	2008	Unit Based	$0 / first bag	$0.75 / sencond bag	
MEDFIELD	10,846	7,065	0.65	Combustion:Millbury	2003	No Fee			
MEDFORD	56,937	25,630	0.45 *	Unknown	na	No Fee			
MEDWAY	10,267	5,616	0.55	Combustion:Millbury	2007	Flat Rate	$150.00 / year		
MELROSE	28,096	13,346	0.48	Combustion:Saugus	1995	No Fee			
MENDON	4,130	1,859	0.45 *	Combustion:Millbury	2006	Unit Based	$1.25 / bag		
MERRIMAC	5,300	2,386	0.45 *	Unknown	na	Flat Rate	$30.00 / year		
METHUEN	40,695	18,319	0.45 *	Spot Market:Private Hauler	unknown	No Fee			
MIDDLEBOROUGH	18,049	8,125	0.45 *	Combustion:Semass	unknown	Flat Rate	$5.00 / year		
MIDDLEFIELD	453	204	0.45 *	Regional Landfill:Northampton	2004	Flat Rate	$35.00 / year		
MIDDLETON	5,162	3,199	0.62	Municipal Landfill	na	Flat Rate	$10.00 / year		
MILFORD	25,402	11,435	0.45 *	Combustion:Millbury	2008	No Fee			
MILLBURY	12,201	5,492	0.45 *	Combustion:Millbury	2005	Flat Rate	$15.00 / year		
MILLIS	7,838	3,528	0.45 *	Combustion:Millbury	2009	Flat Rate + Unit Based	$50.00 / year	$1.00 / 30 gal. bag	
MILLVILLE	2,341	1,054	0.45 *	Combustion:Millbury	2007	No Fee			
MILTON	25,886	11,652	0.45 *	Municipal Landfill	na	Flat Rate + Unit Based	$60.00 / jr car/mini van	$1.50 / can	$20.00 / pick-up truck
MONROE	112	50	0.45 *	Unknown	na	Unknown			
MONSON	7,946	3,577	0.45 *	Unknown	na	Flat Rate	$16.00 / month		
MONTAGUE	8,310	3,741	0.45 *	Municipal Landfill	na	Unit Based	$2.00 / bag		
MONTEREY	805	362	0.45 *	Spot Market:Private Hauler	na	Flat Rate	$40.00 / year		
MONTGOMERY	787	354	0.45 *	Regional Landfill:Northampton	unknown	Flat Rate + Unit Based			
MOUNT WASHINGTON	135	61	0.45 *	Spot Market:Private Hauler	1997	Flat Rate	$35.00 / year		
NAHANT	3,865	1,740	0.45 *	Combustion:Saugus	1994	Flat Rate	$85.00 / year	$30.00 / person/year	
NANTUCKET	15,572	7,010	0.45 *	Municipal Landfill	na	Flat Rate	$50.00 / year		
NATICK	30,881	11,766	0.38	Combustion:Millbury	2009	No Fee			
NEEDHAM	27,849	12,536	0.45 *	Combustion:Millbury	2008	Flat Rate	$30.00 / year		
NEW ASHFORD	186	84	0.45 *	Unknown	na	Unknown			
NEW BEDFORD	106,237	50,818	0.48	Combustion:Semass	1994	No Fee			
NEW BRAINTREE	878	395	0.45 *	Unknown	na	Unknown			
NEW MARLBOROUGH	1,107	498	0.45 *	Spot Market:Private Hauler	unknown	Flat Rate	$50.00 / year sticker		
NEW SALEM	891	401	0.45 *	Unknown	na	Flat Rate	$10.00 / year		
NEWBURY	5,871	2,643	0.45 *	Municipal Landfill	na	Flat Rate	$5.00 / year		
NEWBURYPORT	16,664	7,501	0.45 *	Spot Market:Private Hauler	1997	No Fee			
NEWTON	84,000	47,391	0.56	Combustion:Millbury	2008	No Fee			
NORFOLK	8,212	3,697	0.45 *	Private Landfill:Plainville	1995	Flat Rate + Unit Based	$30.00 / year	$1.35 / 30 gal. bag	
NORTH ADAMS	14,459	6,509	0.45 *	Transfer Station	1995	Flat Rate + Unit Based	$50.00 / year	$1.75 / 30 gal. bag	$0.90 / 15 gal. bag
NORTH ANDOVER	23,327	10,501	0.45 *	Combustion:North Andover	2005	No Fee			
NORTH ATTLEBORO	25,076	11,288	0.45 *	Municipal Landfill	na	Flat Rate	$110.00 / 1-4 unit dwelling		
NORTH BROOKFIELD	4,732	2,130	0.45 *	Municipal Landfill	na	Flat Rate	$50.00 / year		
NORTH READING	12,348	4,905	0.40	Combustion:North Andover	2005	Unit Based	$0.65 / 30 gal. bag		

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
NORTHAMPTON	29,173	13,132	0.45 *	Regional Landfill:Northampton	na	Flat Rate + Unit Based	$5.00 / year	$1.00 / 30 gal. bag	$0.25 / small bag
NORTHBOROUGH	12,702	5,718	0.45 *	Combustion:Millbury	2005	No Fee			
NORTHBRIDGE	13,363	6,015	0.45 *	Combustion:Millbury	2007	Unit Based	$1.00 / carload		
NORTHFIELD	2,838	1,278	0.45 *	Transfer Station:Northfield	unknown	Flat Rate	$25.00 / year		
NORTON	14,446	6,503	0.45 *	Spot Market:Private Hauler	unknown	No Fee			
NORWELL	9,273	4,174	0.45 *	Combustion:Semass	2016	No Fee			
NORWOOD	28,957	13,035	0.45 *	Private Landfill:Plainville	unknown	No Fee			
OAK BLUFFS	9,017	4,059	0.45 *	Combustion:Semass	unknown	Unit Based	$2.50 / barrel		
OAKHAM	1,573	708	0.45 *	Unknown	na	Unknown			
ORANGE	7,540	3,788	0.50	Municipal Landfill	na	Flat Rate + Unit Based	$10.00 / year	$1.00 / bag	
ORLEANS	9,207	4,145	0.45 *	Combustion:Semass	2008	?	$35.00 / year	$75.00 / week	
OTIS	1,144	515	0.45 *	Spot Market:Private Hauler	1995	Flat Rate	$20.00 / year		
OXFORD	12,852	5,785	0.45 *	Combustion:Millbury	2005	Private			
PALMER	12,289	5,532	0.45 *	Municipal Landfill	na	Flat Rate + Unit Based	$35.00 / year	$1.00 / 30 gal. bag	
PAXTON	4,126	1,857	0.45 *	Combustion:Millbury	unknown	No Fee			
PEABODY	47,282	21,284	0.45 *	Combustion:North Andover	2005	No Fee			
PELHAM	1,482	667	0.45 *	Unknown	na	Unknown			
PEMBROKE	14,817	6,670	0.45 *	Spot Market:Private Hauler	1996	Flat Rate	$120.00 / year		
PEPPERELL	10,765	4,846	0.45 *	Municipal Landfill	na	Flat Rate	$50.00 / year		
PERU	858	386	0.45 *	Unknown	na	Unknown			
PETERSHAM	1,140	513	0.45 *	Spot Market:Private Hauler	1995	Flat Rate + Unit Based	$10.00 / year	$1.00 / bag	
PHILLIPSTON	1,471	662	0.45 *	Regional Landfill:Orange	1995	Unit Based	$1.00 / bag		
PITTSFIELD	47,851	21,540	0.45 *	Combustion:Pittsfield	unknown	No Fee			
PLAINFIELD	601	271	0.45 *	Regional Landfill:Northampton	2004	Unit Based	$25.00 / punch card-25 bags		
PLAINVILLE	6,987	3,145	0.45 *	Private Landfill:Plainville	unknown	No Fee			
PLYMOUTH	45,617	20,534	0.45 *	Combustion:Semass	2008	Flat Rate	$12.00 / year		
PLYMPTON	2,441	1,099	0.45 *	Combustion:Semass	2016	Flat Rate	$20.00 / year		
PRINCETON	3,302	1,487	0.45 *	Combustion:Millbury	2011	No Fee			
PROVINCETOWN	7,785	4,957	0.64	Combustion:Semass	unknown	No Fee			
QUINCY	85,755	38,603	0.45 *	Spot Market:Private Hauler	1996	No Fee			
RANDOLPH	30,616	13,782	0.45 *	Private Landfill:Randolph	na	No Fee			
RAYNHAM	9,999	4,501	0.45 *	Municipal Landfill	na	Flat Rate	$40.00 / year		
READING	22,782	10,255	0.45 *	Combustion:Saugus	1995	Flat Rate	$110.00 / year		
REHOBOTH	9,445	4,252	0.45 *	Municipal Landfill	na	Unit Based	$0.50 / 40 bag		
REVERE	42,786	21,895	0.51	Combustion:Saugus	1995	No Fee			
RICHMOND	1,693	762	0.45 *	Combustion:Pittsfield	unknown	No Fee			
ROCHESTER	4,171	1,878	0.45 *	Combustion:Semass	1995	No Fee			
ROCKLAND	15,928	7,170	0.45 *	Municipal Landfill	na	Flat Rate	$64.00 / year		
ROCKPORT	7,519	4,223	0.56	Combustion:Saugus	2004	Flat Rate	$75.00 / year		
ROWE	411	185	0.45 *	Private Landfill:Granby	unknown	No Fee			
ROWLEY	4,592	2,067	0.45 *	Unknown	na	Unknown			
ROYALSTON	1,207	543	0.45 *	Municipal Landfill	na	Flat Rate	$1.00 / year		
RUSSELL	1,660	747	0.45 *	Spot Market:Private Hauler	na	Flat Rate + Unit Based	$20.00 / year	$1.00 / 30 gal. bag	$0.60 / 15 gal. bag
RUTLAND	5,032	2,265	0.45 *	Combustion:Millbury	2008	Unknown			

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
SALEM	38,331	18,547	0.48	Transfer Station	1999	No Fee			
SALISBURY	7,572	3,408	0.45 *	Combustion:Haverhill	unknown	Unit Based	$0.80 / bag		
SANDISFIELD	667	300	0.45 *	Spot Market:Private Hauler	1995	No Fee			
SANDWICH	20,462	13,293	0.65	Combustion:Semass	unknown	Flat Rate	$50.00 / year		
SAUGUS	25,690	11,564	0.45 *	Combustion:Saugus	1995	No Fee			
SAVOY	705	318	0.45 *	Unknown	na	Unknown			
SCITUATE	16,728	7,530	0.45 *	Municipal Landfill	na	Flat Rate	$10.00 / year		
SEEKONK	12,500	5,627	0.45 *	Private Landfill:Fall River	1998	Flat Rate + Unit Based	$86.00 / year	$0.31 / 14-20 gal. bag	$0.53 / 31-33 gal. bag
SHARON	16,061	7,230	0.45 *	Combustion:Semass	2018	Flat Rate	$132.00 / year		
SHEFFIELD	2,938	1,322	0.45 *	Spot Market:Private Hauler	1995	Flat Rate	$110.00 / year		
SHELBURNE	2,068	931	0.45 *	Combustion:Millbury	2008	Unit Based	$1.00 / bag		
SHERBORN	4,148	1,867	0.45 *	Combustion:Millbury	2007	No Fee			
SHIRLEY	5,600	2,543	0.45	Municipal Landfill	na	No Fee			
SHREWSBURY	24,103	10,988	0.46	Combustion:Millbury	2008	No Fee			
SHUTESBURY	1,606	723	0.45 *	Regional Landfill:Amherst	unknown	No Fee			
SOMERSET	17,029	7,666	0.45 *	Spot Market:Private Hauler	2003	Unit Based	$1.50 / 33 gal. bag	$0.75 / 16 gal. bag	
SOMERVILLE	76,210	34,306	0.45 *	Transfer Station	1996	No Fee			
SOUTH HADLEY	16,810	6,907	0.41	Municipal Landfill	na	Flat Rate	$15.00 / year		
SOUTHAMPTON	4,705	2,118	0.45 *	Municipal Landfill	na	Flat Rate	$65.00 / year		
SOUTHBOROUGH	6,659	2,996	0.45 *	Combustion:Millbury	2008	Flat Rate	$100.00 / year		
SOUTHBRIDGE	17,499	7,877	0.45 *	Municipal Landfill	na	No Fee			
SOUTHWICK	7,964	3,585	0.45 *	Combustion:Springfield	2020	Flat Rate	$43.00 / year		
SPENCER	11,961	5,384	0.45 *	Combustion:Millbury	2007	No Fee			
SPRINGFIELD	154,162	60,194	0.39	Combustion:Springfield	2011	No Fee			
STERLING	6,863	2,673	0.39	Regional Landfill:Westminster	unknown	No Fee			
STOCKBRIDGE	2,397	1,079	0.45 *	Private Landfill:Granby	unknown	No Fee			
STONEHAM	22,605	9,938	0.44	Spot Market:Private Hauler	1997	No Fee			
STOUGHTON	27,566	11,529	0.42	Combustion:Semass	2017	No Fee			
STOW	5,568	2,507	0.45 *	Private Landfill:Hudson/Stow	unknown	Flat Rate	$4.25 / 6 bags		
STURBRIDGE	8,090	3,642	0.45 *	Municipal Landfill	na	No Fee			
SUDBURY	14,674	6,605	0.45 *	Municipal Landfill	na	Flat Rate	$85.00 / year		
SUNDERLAND	3,396	1,529	0.45 *	Unknown	na	Unknown			
SUTTON	7,104	3,196	0.45 *	Municipal Landfill	na	Flat Rate	$40.00 / year		
SWAMPSCOTT	14,400	7,139	0.50	Combustion:Saugus	unknown	Flat Rate	$126.00 / year		
SWANSEA	15,575	7,011	0.45 *	Private Landfill:E Bridgewater	unknown	No Fee			
TAUNTON	49,520	19,674	0.40	Regional Landfill:Tauton	na	No Fee			
TEMPLETON	6,550	2,948	0.45 *	Unknown	na	Flat Rate	$5.00 / year		
TEWKSBURY	27,820	12,412	0.45	Combustion:North Andover	2005	No Fee			
TISBURY	7,652	3,445	0.45 *	Combustion:Semass	unknown	Unit Based	$2.50 / 40 gal. bag		
TOLLAND	304	137	0.45 *	Unknown	na	Unknown			
TOPSFIELD	5,767	2,596	0.45 *	Municipal Landfill	na	No Fee			
TOWNSEND	9,210	4,146	0.45 *	Municipal Landfill	1996	Unknown			
TRURO	5,611	2,646	0.47	Combustion:Semass	2015	Flat Rate?			
TYNGSBOROUGH	9,203	4,143	0.45 *	Unknown	na	No Fee			

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
TYRINGHAM	392	176	0.45 *	Combustion:Pittsfield	2006	Unknown			
UPTON	4,788	2,156	0.45 *	Combustion:Millbury	2007	Flat Rate	$25.00 / year		
UXBRIDGE	10,440	4,700	0.45 *	Unknown	na	Private			
WAKEFIELD	25,191	11,340	0.45 *	Combustion:Saugus	unknown	Unknown			
WALES	1,699	765	0.45 *	Combustion:Springfield	unknown	Flat Rate	$20.00 / year		
WALPOLE	20,909	9,412	0.45 *	Combustion:Millbury	2008	No Fee			
WALTHAM	58,128	28,166	0.45 *	Combustion:Semass	2014	Unknown			
WARE	9,988	4,496	0.45 *	Municipal Landfill	na	Flat Rate + Unit Based	$40.00 / year	$1.00 / bag	
WAREHAM	19,991	8,999	0.45 *	Combustion:Semass	2013	Private			
WARREN	4,493	2,023	0.45 *	Municipal Landfill	na	Flat Rate	$2.00 / year		
WARWICK	730	329	0.45 *	Municipal Landfill	na	Flat Rate	$20.00 / year		
WASHINGTON	636	286	0.45 *	Municipal Landfill	na	No Fee			
WATERTOWN	33,041	17,414	0.53	Combustion:North Andover	2005	No Fee			
WAYLAND	12,146	8,550	0.54	Municipal Landfill	na	Unknown			
WEBSTER	16,189	7,287	0.45 *	Unknown	na	Unit Based	$1.00 / bag if recycling	$2.00 / bag if not recycling	
WELLESLEY	26,824	15,378	0.57	Private Landfill:Plainville	1994	No Fee			
WELLFLEET	6,636	2,987	0.45 *	Combustion:Semass	2011	Flat Rate + Unit Based	$45.00 / year	$3.00 / carload	
WENDELL	956	430	0.45 *	Regional Landfill:Orange	unknown	Unit Based	$1.00 / 32 gal. bag		
WENHAM	4,240	1,909	0.45 *	Combustion:North Andover	2005	No Fee			
WEST BOYLSTON	6,574	2,959	0.45 *	Regional Landfill:Westminster	2006	No Fee			
WEST BRIDGEWATER	6,444	2,901	0.45 *	Combustion:Semass	unknown	Flat Rate	$35.00 / year		
WEST BROOKFIELD	3,692	1,662	0.45 *	Unknown	na	Flat Rate	$25.00 / year		
WEST NEWBURY	3,562	1,604	0.45 *	Combustion:North Andover	2005	Unknown			
WEST SPRINGFIELD	27,432	12,349	0.45 *	Combustion:Springfield	2009	No Fee			
WEST STOCKBRIDGE	1,484	668	0.45 *	Unknown	na	Unknown			
WEST TISBURY	3,163	1,424	0.45 *	Combustion:Semass	2008	Unit Based	$2.65 / 40 gal. bag		
WESTBOROUGH	14,074	5,482	0.39	Combustion:Millbury	2008	Flat Rate	$20.00 / year	$10.00 / year (seniors)	
WESTFIELD	38,685	17,414	0.45 *	Unknown	na	Unknown			
WESTFORD	18,117	9,524	0.53	Combustion:North Andover	2005	No Fee			
WESTHAMPTON	1,384	623	0.45 *	Municipal Landfill	na	Flat Rate	$25.00 / year		
WESTMINSTER	6,325	2,847	0.45 *	Regional Landfill:Westminster	unknown	No Fee			
WESTON	10,378	4,672	0.45 *	Combustion:Millbury	2008	Flat Rate	$130.00 / year		
WESTPORT	13,480	6,068	0.45 *	Municipal Landfill	na	Flat Rate	$5.00 / year		
WESTWOOD	13,300	6,882	0.52	Combustion:Millbury	2007	No Fee			
WEYMOUTH	55,258	24,875	0.45 *	Spot Market:Private Hauler	1996	Unknown			
WHATELY	1,429	643	0.45 *	Regional Landfill:Northampton	2001	Unit Based	$2.00 / bag		
WHITMAN	13,147	5,916	0.45 *	Unknown	na	Unknown			
WILBRAHAM	12,796	5,760	0.45 *	Combustion:Springfield	2011	Flat Rate + Unit Based	$75.00 / year	$0.60 / bag	$61.00 / year (seniors)
WILLIAMSBURG	2,626	1,182	0.45 *	Regional Landfill:Northampton	2004	Flat Rate	$40.00 / year		
WILLIAMSTOWN	8,106	3,650	0.45 *	Unknown	na	Flat Rate + Unit Based	$17.00 / year	$0.75 / 15 gal. bag	$1.50 / gal. bag
WILMINGTON	18,007	10,327	0.57	Combustion:North Andover	2005	No Fee			
WINCHENDON	8,766	3,955	0.45 *	Municipal Landfill	na	Flat Rate	$20.00 / year		
WINCHESTER	20,862	9,391	0.45 *	Combustion:North Andover	2005	Flat Rate	$50.00 / year		
WINDSOR	806	364	0.45 *	Unknown	na	Flat Rate	$20.00 / year		

Municipality	Estimated Population	Estimated Tons of MSW Generated	Estimated Generation Rate	Disposal Location	Disposal Contract End Date	Type of SW User Fee Program	User Fee -- 1 price / unit	User Fee -- 2 price / unit	User Fee -- 3 price / unit
WINTHROP	18,233	8,207	0.45 *	Combustion:Saugus	unknown	Unknown			
WOBURN	36,874	16,599	0.45 *	Spot Market:Private Hauler	1997	No Fee			
WORCESTER	167,559	75,427	0.45 *	Combustion:Millbury	2005	No Fee			
WORTHINGTON	1,506	678	0.45 *	Regional Landfill:Northampton	2004	Flat Rate + Unit Based	$30.00 / year	$0.50 / bag	
WRENTHAM	9,432	4,246	0.45 *	Private Landfill:Plainville	1996	Unknown			
YARMOUTH	31,673	14,258	0.45 *	Combustion:Semass	unknown	Flat Rate	$70.00 / year		

* = Estimated generation rate, see methodology description for details.

Appendix J

Scope of Recycling Programs In Massachusetts Cities and Town

Table J-1: Massachusetts Cities and Towns, Trash and Recycling Collection Methods, and Materials Recycled

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
ABINGTON	C	C	13,775	X		X			X		X	X			X	X		X	
ACTON	D	D	18,122	X	X	X					X	X	X	X	X	X		X	swap shop, clothing
ACUSHNET	C	D	9,575	X							X	X	X	X	X	X		X	
ADAMS	D	D	9,450	X	X	X	X	X	X		X	X		X	X	X	X		
AGAWAM	C	C	27,602	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ALFORD	D	D	424	X	X	X	X	X	X		X	X	X	X	X	X	X		
AMESBURY	C	C	15,232	X							X	X		X		X		X	
AMHERST	C	C	35,228	X	X	X	X		X	X•	X	X			X	X	X	X	clothing, swap shop
ANDOVER	C	C	29,093	X	X			X			X	X						X	
ARLINGTON	C	C	47,000	X	X			X			X	X		X	X	X		X	
ASHBURNHAM	C	C	5,667	X	X•	X•		X•	X•		X	X	X	X	X	X		X	
ASHBY	C	C	2,971	X		X•					X	X	X	X	X	X			
ASHFIELD	D	D	1,775	X	X	X	X	X	X		X	X		X	X	X			clothing
ASHLAND	C	C	12,502	X	X	X		X	X		X	X			X	X		X	
ATHOL	P	P	11,547																
ATTLEBORO	C	C	38,065	X	X	X		X	X		X	X			X	X		X	
AUBURN	C	C	14,956	X	X	X		X	X	X	X	X		X	X	X	X		
AVON	C	C	4,658	X		X					X	X		X	X	X	X	X	
AYER	D	D	6,883	X	X	X		X	X		X	X	X	X	X	X		X	clothing, swap shop
BARNSTABLE	D	D	54,044	X	X	X		X	X	X	X	X	X	X	X	X		X	swap shop, clothing
BARRE	D	D	4,756	X	X	X			X	X		X	X	X	X	X		X	swap shop, clothing
BECKET	D	D	1,700	X			X				X	X	X	X	X	X	X		
BEDFORD	C	C	13,100	X	X	X		X	X		X	X		X	X	X		X	
BELCHERTOWN	D	D	11,175	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	clothing
BELLINGHAM	C	D	15,189	X	X	X			X	X	X	X•	X		X•	X•	X•	X	
BELMONT	C	C	24,574	X	X			X			X	X		X	X	X		X	
BERKLEY	C	D	4,427	X		X					X	X	X	X	X	X		X	clothing
BERLIN	D	D	2,311	X	X	X		X	X		X	X	X	X	X	X	X		swap shop,
BERNARDSTON	D	D	2,070	X	X	X	X	X	X		X	X	X		X	X	X		
BEVERLY	C	C	38,100	X	X				X		X	X		X				X	
BILLERICA	C	C	38,399	X	X	X					X	X		X	X	X		X	

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
BLACKSTONE	C	D	8,223	X	X	X		X	X	X	X	X	X	X	X	X	X	X	clothing
BLANDFORD	D	D	1,251	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
BOLTON	D	D	3,230	X	X	X	X	X	X		X	X	X	X	X	X	X		clothing
BOSTON	C	C	582,107	X	X	X					X	X			X	X		X	
BOURNE	C	C	16,428	X*	X*	X*		X*			X	X	X	X		X		X	swap shop, clothing
BOXBOROUGH	D	D	3,445	X	X			X	X		X	X	X		X	X	X		
BOXFORD	C	C	6,580	X	X	X*			X		X	X	X	X	X	X	X		C&D, clothing
BOYLSTON	P	P	3,573																
BRAINTREE	C	C	34,295	X	X*			X*	X*		X	X	X	X	X	X		X	
BREWSTER	D	D	14,189	X	X	X		X	X		X	X	X	X	X	X		X	
BRIDGEWATER	C	D	21,203	X							X	X	X	X	X	X	X	X	
BRIMFIELD	D	D	3,157	X	X	X			X		X	X	X	X	X	X			
BROCKTON	C	D	91,404	X	X	X		X			X	X	X	X			X	X	
BROOKFIELD	D	D	3,051	X	X	X			X		X	X	X	X	X	X		X	clothing
BROOKLINE	C	C	53,898	X	X			X*	X*		X	X		X	X	X		X	
BUCKLAND	C	D	1,995	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
BURLINGTON	C	C	23,372	X							X	X			X	X		X	
CAMBRIDGE	C	C	95,126	X	X	X	X*	X	X	X*	X	X		X	X	X	X*	X	
CANTON	C	C	18,909	X		X					X	X		X	X	X		X	
CARLISLE	D	D	4,553	X		X			X		X	X	X	X	X	X		X	
CARVER	P	D	11,589	X							X	X	X	X	X	X		X	
CHARLEMONT	D	D	1,307	X	X	X	X	X	X		X	X			X	X	X		
CHARLTON	P	P	9,846																
CHATHAM	D	D	11,491	X							X	X	X	X		X		X	swap shop
CHELMSFORD	C	C	32,907	X	X*	X*	X*	X*	X*	X*	X	X			X	X	X*	X	
CHELSEA	C	C	27,859	X		X			X		X	X		X	X	X		X	
CHESHIRE	D	D	3,577	X	X	X	X	X	X		X	X			X	X	X		
CHESTER	D	D	1,305	X	X	X	X	X	X		X		X	X	X	X	X		clothing
CHESTERFIELD	D	D	1,236	X	X	X	X	X	X		X	X		X	X	X			clothing
CHICOPEE	C	C	56,977	X	X	X	X	X	X		X	X		X	X	X			
CHILMARK	D	D	1,707	X	X	X		X	X	X	X	X	X	X	X	X		X	swap shop
CLARKSBURG	D	D	1,768	X	X	X	X	X	X		X	X			X	X	X	X	
CLINTON	C	D	13,084	X	X			X	X		X	X	X	X	X	X	X	X	
COHASSET	D	D	7,341	X	X	X		X	X	X	X	X	X	X	X	X		X	wood, swap shop
COLRAIN	D	D	1,793	X	X	X	X	X	X		X	X	X	X	X	X	X		
CONCORD	C	C	15,450	X	X*	X*		X*	X*		X	X	X	X	X	X		X	
CONWAY	D	D	1,593	X	X	X	X	X	X		X	X	X	X	X	X	X		clothing
CUMMINGTON	D	D	865	X	X	X	X	X	X		X	X		X	X	X			clothing
DALTON	D	D	7,029	X	X	X	X	X	X		X	X			X	X	X	X	

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
DANVERS	C	D	24,407	X	X			X			X	X	X	X				X	
DARTMOUTH	C	C	27,436	X							X	X	X	X		X		X	
DEDHAM	C	C	23,687	X							X	X			X	X		X	
DEERFIELD	D	D	5,079	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DENNIS	D	D	27,898	X		X					X	X	X	X	X	X		X	swap shop, clothing
DIGHTON	C	C	5,713	X							X	X	X	X	X	X		X	
DOUGLAS	D	D	5,549	X							X	X		X	X	X		X	clothing
DOVER	D	D	5,056	X	X	X			X		X	X	X	X	X	X		X	clothing
DRACUT	C	D	26,586	X	X	X		X			X	X			X	X		X	
DUDLEY	D	D	9,595	X	X	X		X	X		X	X	X	X		X		X	
DUNSTABLE	C	C	2,363	X	X	X			X		X	X		X	X	X		X	clothing
DUXBURY	D	D	14,266	X	X	X			X		X	X		X		X		X	clothing, furniture
EAST BRIDGEWATER	C	D	11,077	X							X	X	X		X	X	X	X	clothing
EAST BROOKFIELD	C	C	2,018	X	X	X		X	X		X	X	X	X	X	X	X		
EAST LONGMEADOW	C	C	13,404	X	X	X			X		X	X		X				X	
EASTHAM	D	D	9,591	X							X	X	X	X	X	X		X	swap shop
EASTHAMPTON	C	C	15,825	X	X	X	X		X		X	X		X	X	X	X	X	
EASTON	D	D	20,064	X	X	X					X	X	X		X	X		X	swap shop, clothing
EDGARTOWN	D	D	10,678	X	X	X		X	X		X	X	X	X	X	X			
EGREMONT	D	D	1,291	X	X	X		X	X		X	X	X	X	X	X	X		
ERVING	C	C	1,438	X			X		X		X	X		X	X*	X*	X*	X	
ESSEX	D	D	3,241	X	X			X	X		X	X	X	X		X			
EVERETT	C	C	35,701	X							X	X		X	X	X		X	
FAIRHAVEN	C	C	16,066	X		X*					X	X		X	X	X		X	clothing
FALL RIVER	C	D	91,379	X								X	X	X				X	
FALMOUTH	C	C	40,182			X*					X	X		X		X		X	clothing
FITCHBURG	C	C	40,787	X	X*	X*		X*	X*		X	X	X	X	X*	X	X*	X	
FLORIDA	D	D	750	X	X	X	X	X	X		X	X			X	X	X		
FOXBOROUGH	C	C	15,081	X	X	X	X	X	X		X	X		X	X	X		X	
FRAMINGHAM	C	C	65,791	X	X	X		X	X		X	X		X	X	X	X	X	
FRANKLIN	C	C	22,764	X	X	X*					X	X		X	X	X		X	swap shop
FREETOWN	C	D	8,739	X		X					X	X	X	X	X	X	X	X	
GARDNER	C	D	20,123	X	X	X		X	X		X	X				X		X	
GAY HEAD	D	D	434	X	X	X		X	X		X	X		X	X	X			
GEORGETOWN	D	?	6,523																
GILL	D	D	1,592	X	X	X	X	X	X		X	X			X	X	X		
GLOUCESTER	C	C	29,224	X	X*			X			X	X			X	X		X	
GOSHEN	D	D	921	X	X	X	X	X	X		X	X		X	X	X			clothing
GOSNOLD	C	C	84	X							X	X				X			

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
GRAFTON	C	D	13,077	X	X						X	X				X		X	
GRANBY	D	D	5,712	X	X	X		X	X		X	X	X	X	X	X	X	X	
GRANVILLE	D	D	1,490	X	X	X		X	X		X	X	X	X	X	X	X		
GREAT BARRINGTON	D	D	7,632	X	X	X	X	X	X		X	X	X	X	X	X	X		
GREENFIELD	C	C	18,507	X	X	X*		X	X		X	X	X		X*	X*	X*		clothing
GROTON	C	D	7,894	X	X	X		X	X		X	X	X	X	X	X		X	
GROVELAND	C	C	5,261	X	X			X	X		X	X		X	X	X			
HADLEY	D	D	4,210	X	X	X		X	X		X	X	X	X	X	X		X	
HALIFAX	C	C	6,678	X		X			X*		X	X	X	X	X	X		X	swap shop
HAMILTON	C	C	7,387	X	X			X			X	X		X	X	X		X	
HAMPDEN	D	D	4,845	X		X					X	X	X	X		X		X	swap shop, furniture
HANCOCK	D	D	622	X	X	X	X	X	X		X	X			X	X	X		
HANOVER	D	D	11,896	X							X	X	X		X	X	X	X	clothing
HANSON	D	D	9,161	X							X	X	X	X	X	X			clothing, swap shop
HARDWICK	D	D	2,475	X	X	X		X	X	X	X	X		X	X	X	X	X	clothing
HARVARD	D	D	12,674	X	X	X		X	X	X	X	X	X	X	X	X	X		clothing
HARWICH	D	D	16,502	X		X					X	X				X		X	clothing
HATFIELD	D	D	3,248	X	X	X	X	X	X		X	X			X	X			clothing
HAVERHILL	C	D	53,000	X	X	X		X	X	X	X	X		X		X			
HAWLEY	D	D	349	X	X	X	X	X	X		X	X	X	X	X	X	X		swap shop, C&D
HEATH	D	D	710	X	X	X	X	X	X		X	X	X	X					
HINGHAM	D	D	20,165	X		X			X		X	X	X	X	X	X		X	clothing
HINSDALE	D	D	2,007	X	X	X	X	X	X		X	X		X	X	X	X		
HOLBROOK	C	D	11,312	X							X	X		X				X	
HOLDEN	C	C	14,630	X	X	X		X	X	X	X	X		X	X	X	X	X	
HOLLAND	P	D	2,324											X				X	
HOLLISTON	C	C	13,279	X	X	X*	X	X	X	X	X	X	X	X	X	X		X	
HOLYOKE	C	C	42,463	X	X	X		X	X		X	X	X	X	X	X	X	X	
HOPEDALE	C	C	5,525	X	X	X		X	X	X	X	X*			X	X		X	clothing
HOPKINTON	D	D	9,701	X	X	X		X	X	X	X	X		X	X	X		X	clothing
HUBBARDSTON	C	D	2,834	X	X	X		X	X	X	X		X	X	X	X	X		
HUDSON	P	D	17,792	X	X	X		X	X		X	X		X	X	X		X	swap shop
HULL	P	D	10,262	X		X				X				X				X	
HUNTINGTON	D	D	2,031	X	X	X	X	X	X		X	X		X	X	X			clothing
IPSWICH	C	C	12,145	X	X*	X*		X*	X		X		X	X	X	X		X	
KINGSTON	D	D	9,155	X	X			X	X		X	X	X	X	X	X		X	wood, C&D
LAKEVILLE	D	D	8,161	X	X	X			X		X	X	X	X	X	X	X	X	clothing
LANCASTER	C	D	6,652	X	X	X		X	X	X	X	X	X	X	X	X	X	X	clothing
LANESBOROUGH	C	D	3,156	X	X	X	X	X	X		X	X			X	X	X		

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
LAWRENCE	C	C	67,802	X	X	X		X	X	X				X				X	clothing
LEE	D	D	5,876	X	X	X	X	X	X		X	X	X	X	X	X	X		
LEICESTER	C	D	10,272	X	X	X		X	X		X	X	X	X	X	X	X	X	swap shop, clothing
LENOX	C	C	5,096	X	X	X	X	X	X		X	X			X	X	X		
LEOMINSTER	C	C	38,311	X	X	X		X	X		X	X	X	X	X	X		X	
LEVERETT	D	D	1,826	X	X	X	X	X	X		X	X	X		X	X	X		clothing
LEXINGTON	C	C	29,135	X	X	X	X	X	X		X	X		X	X	X		X	
LEYDEN	D	D	722	X	X	X	X	X	X		X				X	X	X		
LINCOLN	D	D	7,882	X	X			X	X	X	X	X	X	X					swap shop
LITTLETON	D	D	7,259	X	X			X	X		X	X	X	X	X	X	X	X	clothing
LONGMEADOW	C	C	16,301	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	swap shop, clothing
LOWELL	C	C	102,389	X	X	X		X	X		X	X		X	X	X		X	
LUDLOW	C	C	19,118	X	X	X		X	X		X	X	X	X	X	X	X	X	
LUNENBURG	P	P	9,203																
LYNN	C	D	80,018	X					X		X	X			X	X		X	
LYNNFIELD	C	D	11,313	X	X				X		X	X	X	X				X	clothing
MALDEN	C	C	53,884	X	X			X			X	X			X	X		X	
MANCHESTER	C	C	5,362	X							X	X				X		X	
MANSFIELD	C	C	16,762	X	X						X	X	X	X	X	X			clothing
MARBLEHEAD	C	C	19,895	X	X				X*		X*	X*	X			X*		X	swap shop, clothing
MARION	C	C	4,571	X				X	X		X	X	X	X	X	X	X	X	
MARLBOROUGH	C	D	32,499	X	X	X		X	X	X	X	X	X	X	X	X		X	
MARSHFIELD	C	C	21,699	X	X	X		X	X		X	X	X	X	X	X		X	swap shop
MASHPEE	D	D	13,832	X							X	X		X	X	X		X	
MATTAPOISETT	D	D	5,954	X							X	X	X	X	X	X		X	swap shop, clothing
MAYNARD	C	C	10,544	X	X	X		X	X	X	X	X	X	X	X	X		X	
MEDFIELD	D	D	10,846	X							X	X	X	X		X		X	clothing
MEDFORD	C	C	56,937	X	X				X		X	X	X					X	
MEDWAY	C	C	10,267	X	X	X		X	X	X	X	X		X	X	X	X	X	swap shop
MELROSE	C	C	28,096	X	X	X*		X	X*		X	X	X	X	X	X		X	
MENDON	C	C	4,130	X							X	X			X	X		X	
MERRIMAC	D	D	5,300	X	X	X		X	X		X	X	X	X	X	X	X		clothing
METHUEN	C	C	40,695	X	X	X		X	X		X	X	X	X		X		X	
MIDDLEBOROUGH	C	C	18,049	X							X	X		X		X		X	clothing
MIDDLEFIELD	D	D	453	X	X	X	X	X	X		X	X		X	X	X			clothing
MIDDLETON	D	D	5,182	X	X			X	X	X	X	X	X	X	X	X		X	swap shop, clothing
MILFORD	C	C	25,402	X	X			X	X	X	X	X	X	X	X	X	X	X	clothing
MILLBURY	C	D	12,201	X	X	X					X	X	X	X		X		X	clothing
MILLIS	D	D	7,838	X	X			X	X		X	X	X	X		X		X	

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
MILLVILLE	C	C	2,341	X		X		X	X		X	X	X	X	X	X		X	swap shop, clothing
MILTON	C	C	25,886	X	X	X		X	X		X	X		X	X	X	X	X	
MONROE	C	D	112	X	X	X		X	X	X	X	X	X	X	X	X		X	
MONSON	C	C	7,946	X	X	X		X	X		X	X		X	X	X	X	X	
MONTAGUE	C	C	8,310	X	X	X	X	X	X		X	X			X	X	X	X	
MONTEREY	D	D	805	X	X	X	X	X	X		X	X	X	X	X	X	X		
MONTGOMERY	C	C	787	X		X	X	X			X	X			X	X			
MOUNT WASHINGTON	D	D	135	X	X	X	X	X	X		X	X			X	X	X		
NAHANT	C	C	3,865	X	X			X			X	X	X	X	X	X		X	
NANTUCKET	D	D	15,572			X			X		X	X	X	X	X	X		X	swap shop, clothing
NATICK	C	C	30,881	X	X	X		X	X		X	X	X	X	X	X		X	
NEEDHAM	D	D	27,849	X	X	X		X	X	X	X	X	X	X	X	X		X	
NEW ASHFORD	D	D	186	X	X	X	X	X	X		X	X			X	X	X		
NEW BEDFORD	C	C	106,237	X		X*			X*	X*	X	X	X	X	X*	X	X*	X	
NEW BRAINTREE	D	D	878	X	X	X		X	X	X	X	X	X	X	X	X	X	X	
NEW MARLBORO	D	D	1,107	X	X	X	X	X	X		X	X	X	X					
NEW SALEM	D	D	891	X	X	X	X	X	X		X	X	X	X	X	X	X		
NEWBURY	D	D	5,871	X	X	X		X	X	X	X	X	X	X	X	X		X	swap shop, clothing
NEWBURYPORT	C	C	16,664	X		X*			X		X	X		X	X*	X		X	
NEWTON	C	C	84,000	X	X		X*	X*	X*		X	X		X	X	X	X*	X	
NORFOLK	D	D	8,212	X	X	X		X	X		X	X	X	X		X		X	clothing
NORTH ADAMS	D	D	14,459	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
NORTH ANDOVER	C	C	23,327	X	X	X		X	X		X	X			X*			X	
NORTH ATTLEBORO	C	C	25,078	X							X	X	X	X	X	X		X	
NORTH BROOKFIELD	C	D	4,732	X	X	X		X	X	X	X	X	X	X		X		X	swap shop, clothing
NORTH READING	C	D	12,348	X		X		X	X		X	X		X	X	X			
NORTHAMPTON	D	D	29,173	X	X	X		X	X		X	X	X	X	X	X	X	X	clothing
NORTHBORO	C	C	12,702	X	X						X	X			X	X		X	
NORTHBRIDGE	C	D	13,363	X							X	X	X	X	X	X		X	
NORTHFIELD	D	D	2,838	X	X	X	X	X	X		X	X	X	X	X	X	X		clothing
NORTON	C	C	14,448	X	X	X			X	X	X	X		X	X	X		X	
NORWELL	C	C	9,273	X		X					X	X	X	X	X	X		X	
NORWOOD	C	C	28,957	X					X		X	X			X	X		X	
OAK BLUFFS	C	D	9,017	X	X	X					X	X	X	X	X	X			swap shop.
OAKHAM	C	D	1,573	X	X				X		X	X	X	X	X	X	X		
ORANGE	D	D	7,540	X	X	X	X	X	X	X	X	X	X		X	X	X	X	wap shop, clothing, C&I
ORLEANS	D	D	9,207	X		X		X		X	X	X	X	X	X	X		X	swap shop
OTIS	D	D	1,144	X	X	X	X	X	X		X	X	X	X	X	X	X	X	clothing
OXFORD	P/C	P/C	12,852																clothing

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
PALMER	D	D	12,269	X	X	X		X	X		X	X			X	X	X		swap shop
PAXTON	C	C	4,126	X	X						X	X		X				X	
PEABODY	C	C	47,282	X	X				X		X		X		X	X		X	
PELHAM	D	D	1,482	X	X	X	X	X	X		X	X			X	X			
PEMBROKE	C	D	14,817	X	X			X	X	X	X	X	X	X	X	X		X	clothing
PEPPERELL	D	D	10,765	X		X					X	X		X	X	X			
PERU	D	D	858	X	X	X	X	X	X		X	X			X	X	X		
PETERSHAM	D	D	1,140	X	X	X					X	X	X	X					
PHILLIPSTON	D	D	1,471	X	X	X					X	X	X	X	X	X		X	
PITTSFIELD	C	C	47,851	X	X	X	X	X	X		X	X	X	X	X	X	X	X	C&D
PLAINFIELD	D	D	601	X	X	X	X	X	X		X	X		X	X	X			clothing
PLAINVILLE	C	C	6,987	X					X		X	X		X	X	X		X	clothing
PLYMOUTH	D	D	45,617	X		X					X	X	X	X	X	X		X	
PLYMPTON	D	D	2,441	X	X	X			X		X	X		X					
PRINCETON	C	C	3,302	X	X	X			X	X	X	X			X	X			clothing
PROVINCETOWN	C	C	7,785	X		X		X			X	X	X			X		X	
QUINCY	C	C	85,755	X				X	X	X	X	X			X	X		X	
RANDOLPH	C	C	30,616	X							X	X		X		X		X	
RAYNHAM	D	D	9,999	X							X	X	X	X		X		X	swap shop, clothing
READING	C	C	22,782	X	X	X		X			X	X			X	X		X	
REHOBOTH	D	D	9,445	X		X				X	X	X		X	X	X	X	X	clothing
REVERE	C	C	42,786	X	X	X		X	X	X	X	X	X	X	X	X		X	
RICHMOND	C	C	1,693	X	X	X	X	X	X		X	X		X	X	X	X		
ROCHESTER	C	C	4,171	X							X			X	X	X			
ROCKLAND	C	D	15,928			X				X	X	X		X	X	X	X	X	wood
ROCKPORT	P	D	7,519	X	X	X	X	X	X	X	X	X	X		X	X		X	swap shop
ROWE	D	D	411	X	X	X	X	X	X		X			X	X	X	X		
ROWLEY	P	D	4,592	X							X	X			X	X			
ROYALSTON	D	D	1,207	X	X	X	X	X	X	X	X	X	X	X	X	X	X		swap shop
RUSSELL	D	D	1,660	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
RUTLAND	C	D	5,032											X				X	
SALEM	C	C	38,331	X	X			X	X	X	X	X		X	X	X		X	
SALISBURY	D	D	7,572	X							X	X						X	
SANDISFIELD	D	D	667	X		X					X	X	X	X	X	X	X		
SANDWICH	D	D	20,462	X		X		X			X	X	X	X	X	X	X	X	clothing
SAUGUS	C	D	25,690	X	X	X	X		X		X			X		X		X	
SAVOY	D	D	705	X	X	X	X	X	X		X	X			X	X	X		
SCITUATE	D	D	16,728	X	X				X		X	X	X	X		X		X	
SEEKONK	C	C	12,500	X	X	X		X	X	X	X	X	X	X		X		X	

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
SHARON	C	C	16,061	X							X	X	X	X	X	X		X	
SHEFFIELD	D	D	2,938	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SHELBURNE	D	D	2,068	X	X	X	X	X	X		X			X	X	X	X		clothing
SHERBORN	D	D	4,148	X	X	X		X	X		X	X	X		X	X			clothing
SHIRLEY	C	D	5,600	X	X			X	X		X	X		X	X	X		X	
SHREWSBURY	C	C	24,103	X	X						X	X			X	X	X	X	
SHUTESBURY	D	D	1,606	X	X	X	X	X	X		X	X	X	X					
SOMERSET	C	C	17,029	X		X			X		X	X	X	X	X	X		X	swap shop, clothing
SOMERVILLE	C	C	76,210	X	X	X	X	X	X	X	X	X		X	X	X	X		
SOUTH HADLEY	C	C	16,810	X	X	X	X		X	X	X	X		X	X	X	X	X	C&D
SOUTHAMPTON	D	D	4,705	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
SOUTHBORO	D	D	6,659	X							X	X		X		X		X	swap shop, clothing
SOUTHBRIDGE	C	C	17,499	X	X	X			X	X	X	X		X		X		X	swap shop
SOUTHWICK	D	D	7,964	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
SPENCER	D	D	11,961	X	X	X		X	X		X	X	X	X		X			clothing
SPRINGFIELD	C	C	154,162	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
STERLING	C	C	6,863	X	X	X		X	X	X	X	X	X	X	X*	X		X	swap shop, clothing
STOCKBRIDGE	D	D	2,397	X	X	X	X	X	X		X	X	X		X	X	X		
STONEHAM	C	C	22,605	X							X	X		X	X	X		X	
STOUGHTON	C	C	27,566								X	X	X	X				X	
STOW	D	D	5,568	X	X	X			X		X	X			X	X			swap shop
STURBRIDGE	D	D	8,090	X	X	X	X	X	X	X	X	X	X	X	X	X		X	wap shop, clothing, CAI
SUDBURY	D	D	14,674	X	X	X		X	X		X	X	X	X	X	X		X	swap shop
SUNDERLAND	C	C	3,396	X	X	X	X	X	X		X	X			X	X	X		clothing
SUTTON	D	D	7,104	X	X						X	X	X	X	X	X			
SWAMPSCOTT	C	C	14,400	X	X	X	X	X	X		X	X		X	X	X		X	
SWANSEA	C	C	15,575	X		X			X		X	X		X	X	X		X	
TAUNTON	C	C	49,520	X	X	X		X	X	X	X	X	X	X	X	X		X	swap shop, clothing
TEMPLETON	D	D	6,550	X	X	X			X	X	X	X			X	X	X	X	clothing
TEWKSBURY	C	C	27,620	X		X					X	X		X	X	X		X	
TISBURY	C	C	7,652	X		X					X	X	X		X	X		X	
TOLLAND	D	D	304	X	X	X	X	X	X		X	X	X	X	X	X	X		swap shop
TOPSFIELD	C	D	5,767	X	X			X	X		X	X		X	X	X	X	X	clothing
TOWNSEND	C	D	9,210	X	X	X		X	X	X	X	X	X	X	X	X	X	X	clothgin
TRURO	D	D	5,611	X					X		X	X	X	X	X	X		X	swap shop, clothing
TYNGSBORO	C	D	9,203	X	X				X		X	X		X	X	X	X		clothing
TYRINGHAM	D	D	392	X	X	X		X	X		X	X	X	X				X	
UPTON	D	D	4,788	X							X	X	X	X	X	X		X	swap shop
UXBRIDGE	P	D	10,440	X							X					X			

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
WAKEFIELD	C	C	25,191	X	X						X	X		X	X	X		X	
WALES	D	D	1,699	X	X	X	X	X	X		X	X	X	X	X	X	X		clothing, furniture
WALPOLE	C	C	20,909	X	X	X	X	X	X	X	X	X			X	X	X	X	clothing
WALTHAM	C	C	58,128	X	X	X	X	X	X		X	X		X	X	X		X	
WARE	D	D	9,988	X	X		X	X	X		X	X			X	X	X	X	
WAREHAM	P	P	19,991																
WARREN	D	D	4,493	X					X		X	X	X	X	X	X	X		clothing
WARWICK	D	D	730	X	X	X	X	X	X		X	X	X	X	X	X	X		swap shop, clothing
WASHINGTON	D	D	636	X	X	X	X	X	X		X	X	X	X	X	X	X		
WATERTOWN	C	C	33,041	X	X			X	X*		X	X		X	X	X		X	clothing
WAYLAND	D	D	12,146	X	X	X		X	X	X	X	X	X	X	X	X			swap shop, clothing, woo
WEBSTER	D	D	16,189	X	X	X		X	X	X	X	X	X	X		X		X	
WELLESLEY	D	D	26,824	X	X	X		X	X		X	X	X		X	X		X	clothing
WELLFLEET	D	D	6,636	X	X	X		X	X	X	X	X	X	X	X	X		X	
WENDELL	D	D	956	X	X	X	X	X	X		X	X	X		X	X	X		
WENHAM	C	C	4,240	X							X	X		X	X	X		X	
WEST BOYLSTON	C	C	6,574	X	X			X	X		X	X			X	X		X	
WEST BRIDGEWATER	D	D	6,444	X		X					X	X	X	X	X	X	X	X	clothing
WEST BROOKFIELD	D	D	3,692	X							X	X	X	X		X		X	clothing, swap shop
WEST NEWBURY	C	D	3,562	X	X	X		X	X		X	X	X	X	X	X			
WEST SPRINGFIELD	C	C	27,432	X	X	X	X	X	X		X	X		X	X	X	X	X	
WEST STOCKBRIDGE	D	D	1,484	X	X	X	X	X	X		X	X	X	X	X	X	X		
WEST TISBURY	D	D	3,163	X	X	X		X	X		X	X		X	X	X		X	swap shop
WESTBOROUGH	D	D	14,074	X	X	X		X	X	X	X	X		X	X	X		X	swap shop, clothing
WESTFIELD	C	C	38,685	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
WESTFORD	C	C	16,117								X	X		X		X		X	clothing
WESTHAMPTON	D	D	1,384	X	X	X	X	X	X		X	X		X	X	X			clothing
WESTMINSTER	C	C	6,325	X		X*	X*	X*	X*		X	X	X	X	X*	X	X*	X	
WESTON	D	D	10,378	X	X	X		X	X	X	X	X	X		X	X		X	ood, clothing, swap sho
WESTPORT	D	D	13,480	X	X	X		X	X		X	X	X	X		X		X	
WESTWOOD	C	D	13,300	X	X	X	X	X	X		X	X	X	X	X	X		X	
WEYMOUTH	C	C	55,258	X	X						X	X		X	X	X		X	wood
WHATELY	D	D	1,429	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
WHITMAN	C	C	13,147	X		X			X		X			X	X	X		X	
WILBRAHAM	D	D	12,796	X	X	X		X	X	X	X	X	X	X	X	X	X		
WILLIAMSBURG	D	D	2,626	X	X	X	X	X	X		X	X		X	X	X			clothing
WILLIAMSTOWN	D	D	8,108	X	X	X	X	X	X		X	X		X	X	X	X		
WILMINGTON	C	C	18,007	X	X	X		X	X		X	X		X	X	X		X	
WINCHENDON	D	D	8,786	X	X	X		X	X	X	X	X	X	X				X	swap shop, clothing

MUNICIPALITY	TRASH COLLECTION	RECYCLING COLLECTION	POPULATION EST.	NEWSPAPERS	MAGAZINES	CORRUGATED CARDBOARD	ASEPTIC/WAXED	PHONE BOOKS	OTHER PAPER	OTHER PAPERBOARD	GLASS	ALUMINUM / STEEL CANS	SCRAP METAL	WHITE GOODS	#1 PLASTICS	#2 PLASTICS	OTHER PLASTICS	YARD WASTE / LEAVES	MISCELLANEOUS
WINCHESTER	C	D	20,862	X	X	X		X	X		X	X	X	X					
WINDSOR	D	D	808	X	X	X	X	X	X		X	X		X	X	X	X		
WINTHROP	C	C	18,233	X				X			X	X			X	X		X	
WOBURN	C	C	36,874	X	X			X	X		X	X	X					X	
WORCESTER	C	C	167,559	X	X				X	X	X	X	X	X	X	X	X	X	
WORTHINGTON	D	D	1,506	X	X	X	X	X	X		X	X		X	X	X			clothing
WRENTHAM	C	C	9,432	X	X		X		X	X	X	X		X	X	X		X	
YARMOUTH	D	D	31,673	X	X	X		X			X	X	X	X				X	swap shop
Totals																			
# of Municpalities			351	337	254	245	101	217	246	67	338	329	189	267	280	316	128	239	NA
Total Population			6,193,366	5,995,109	4,666,155	4,105,020	1,147,004	3,372,997	3,890,337	1,468,614	5,938,276	5,914,195	2,802,598	4,405,753	4,939,638	5,490,999	1,870,681	5,524,353	NA
% of State Population			100%	97%	75%	66%	19%	54%	63%	24%	96%	95%	45%	71%	80%	89%	30%	89%	NA
Trash & Recycling-same collection meth			NA	5,192,119	4,163,490	3,649,493	1,095,344	2,955,247	3,471,999	1,287,639	5,220,999	5,144,503	2,308,573	3,771,256	4,520,922	4,933,020	1,635,171	4,828,666	NA
% of State Population			NA	84%	67%	59%	18%	48%	56%	21%	84%	83%	37%	61%	73%	80%	26%	78%	NA
Curb trash / Drop-off Recycl. - Populatic			NA	802,989	502,665	455,527	51,660	417,750	418,338	180,975	717,277	769,692	494,025	634,497	416,716	557,979	235,510	695,687	NA
% of State Population			NA	13%	8%	7%	1%	7%	7%	3%	12%	12%	8%	10%	7%	9%	4%	11%	NA
Curbside Collection - Population			4,150,000	4,126,336	3,399,107	2,770,792	912,525	2,278,829	2,736,796	1,010,124	4,146,399	4,069,654	1,440,721	2,865,893	3,670,418	3,916,973	1,316,782	3,995,431	NA
% of State Population			67%	67%	55%	45%	15%	37%	44%	16%	67%	66%	23%	46%	59%	63%	21%	65%	NA
Drop-off Collection - Population			1,870,000	1,866,773	1,267,047	1,334,228	234,479	1,094,168	1,153,541	458,490	1,791,877	1,844,541	1,361,877	1,539,860	1,269,220	1,574,026	553,899	1,528,922	NA
% of State Population			30%	30%	20%	22%	4%	18%	19%	7%	29%	30%	22%	25%	20%	25%	9%	25%	NA

Notes:

1) most programs accept yardwaste, leaves, white goods and other scrap metal at their drop-off center or have specialized curbside collection.
2) population figures are estimates, and do not account residents who are excluded from recycling program services (ie., condominum residents).
3) population figures for Cape Cod municipalities include estimates for tourism.
4) C= Curbside Collection; D=Drop-off Collection; P=Private Hauling
5) x* = material is recycled at drop-off center only.

Appendix K

Battery Policy and Legislation

Table K-1: A comparison of the key provisions in battery legislation of Northeast states

Specific Items	CT	ME	NJ	NY	RI	NH	VT
Mercuric Oxide:Industrial	Disposal Ban	Sales ban: "any" Hg (1/1/96)	Sales ban. Disposal ban.	Can't burn.	Sales ban. Disposal ban 1/1/94.	Disposal ban.	Sales ban 1/1/96. Disposal ban.
Mercuric Oxide: Button	Disposal Ban	Sales ban: "any" Hg. (1/1/96)	Sales ban. Disposal ban.	Can't burn.	Sales ban.	Disposal ban.	Sales ban 1/1/96. Disposal ban.
Alakaline Manganese: Cylindrical	Sales Ban >250 ppm Hg	Sales ban. "Any added" Hg.	Sales ban >1ppm Hg.	Sales ban >250 ppm Hg. Can't burn.	Sales ban >250 ppm	Sales ban "any added Hg. 1/1/96	Sales ban "any added Hg." 1/1/96
Zinc Carbon:Cylindrical	Sales Ban >1ppm Hg	Sales ban: "Any" Hg		Sales ban >1 ppm Hg. Can't burn.		Sales ban >10 ppm Hg.	Sales ban "any added" Hg.
Alkaline:Button		Sales ban: > 25 mg Hg per cell	Sales ban: >25 mg Hg per cell	Sales ban >25 mg Hg. Can't burn.	Sales ban >25 mg.	Sales ban >25 mg Hg.	Sales ban >25 mg Hg.
Nickel Cadmium Sealed Lead	Removeable. Labeled. Recycle.	Recycle Nicads.	Removeable. Labeling. Disposal ban.	Can't burn.	Removeable. Labeling. Disposal ban.		Removeable. Labeling. Disposal ban.
Other Rechargeables (Nickel hydride, lithium)	Recycle.		Disposal ban.	Can't burn.			Disposal ban if on-going collection in town.
Lead Acid Car Batteries	Disposal Ban.	$10 deposit: lead acid.	Counties w/HHW plans: collect HgOx, nicads & lead.		Disposal ban. $5 depost if purchase w/out returning used battery.		Disposal ban.

Table K-2: Two proposed battery bills under consideration by the Massachusetts Legislature

Specific Items	Cohen Bill	Straus Bill
Mercuric Oxide: Industrial	Sales ban, but temporary exemption possible.	Sales ban. Disposal ban. Must Recycle.
Mercuric Oxide: Button	Sales ban.	Sales ban.
Alkaline Manganese: Cylindrical	Sales ban >5 ppm Hg.	Sales ban >5 ppm Hg.[1]
Zinc Carbon: Cylindrical	Sales ban >5 ppm Hg.	Sales ban >5 ppm Hg.
Alakline: Button	Sales ban >25 mg Hg.	Sales ban >25 mg Hg.
Nickel Cadmium	Disposal ban after 1996 Removeable. Labeling. Possible exemption. Makers must recycle if sell in MA. DEP approves makers' recycling plans.	Removeable. Labeling. Possible exemption. Disposal ban. Must recycle.
Lead Acid Car Batteries	$5 deposit. Waived if return used battery or refund if return used battery w/in 7 days of purchase. Disposal ban after 1996. State gets 80% unclaimed deposits. Dealer keeps 20%.	
ALL BATTERIES	Disposal ban by 1999. Must recycle by 1998. Labeling.	
Manufacturers	Must recycle batteries if sell in MA. DEP approves recycling plan.	Of Nicads and Hg oxides must collect for recycling or proper disposal.
EOAF	Levies fees on makers to cover cost of compliance, monitoring and administration.	

[1] Actual wording is "intentionally introduced amounts" of Hg which translates to about 5 ppm maximum concentration.

Appendix L

Policy on Approving Tonnage to Facilitate Unlined Municipal Landfill Closures

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

William F. Weld
Governor
Argeo Paul Cellucci
Lt. Governor

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Policy on Approving Tonnage Increases to Facilitate Unlined Municipal Landfill Closures
Bureau of Waste Prevention Policy
BWP 95-022

Thomas B. Powers

Thomas B. Powers, Deputy Commissioner

12/7/95
Date

SUMMARY OF POLICY

This policy addresses the circumstances under which the Department of Environmental Protection (DEP) will permit unlined municipal landfills to increase their rate of disposal of non-municipal solid waste (non-MSW) in accordance with executed consent orders to close and cap these landfills.

DEP will review requests for increased waste intake from the perspective of minimizing the additional waste disposal necessary to meet closure and capping deadlines prescribed under consent orders. DEP will review each case on its individual merits in order to determine whether the disposal rate increase requested is consistent with the limitations and conditions established below.

POLICY STATEMENT

Estimates on future disposal capacity need or the declaration of a moratorium on permitting new disposal capacity contained in the Final 1995 Solid Waste Master Plan Update shall not preclude DEP from establishing or increasing the tonnage limits for disposal of construction and demolition debris (C&D) or other suitable non-MSW as part of a negotiated consent order resulting in the accelerated final closure and capping of unlined municipal landfills. By adopting this interim policy, DEP does not intend to re-open any executed consent agreements.

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LIMITATIONS AND CONDITIONS IN APPLICATION OF THE POLICY

A. Type of Waste

This policy applies only to requests to increase acceptance of non-MSW including, for example, construction and demolition debris (C&D), soils and excavate. This policy does not authorize consent order negotiations to include increases in disposal of MSW or sludges and biosolids, nor is it intended to interfere with continued disposal of these wastes in accordance with the terms and conditions of valid DEP permits, plan approvals or outstanding consent orders.

B. Type of Expansion

Negotiated consent orders shall be limited to increased filling rates in previously approved operating areas only; lateral expansions into areas not previously used for waste disposal will not be considered. Limited vertical expansions may be included in consent orders only where they are necessary to achieve appropriate slopes and grades.

C. Rate and Duration of Increase

The amount and duration of an increase in allowable tonnage shall be determined on a site-specific basis in consideration of, but not limited to, the following factors:

- The DEP-approved tonnage limit or the typical historical tonnage rate;
- All impacts of increased volume on public health and the environment including, for example, increased traffic;
- Operating compliance history, including, without limitation, compliance with restrictions on the disposal of recyclables pursuant to 310 CMR 19.017 and the 25 percent recycling requirement pursuant to 310 CMR 19.038(2)(d) for waste currently being disposed;
- The fiscal operating budget and physical limitations of the site;
- Consent order deadlines, if any; and
- The degree to which acceptance of additional waste material will enhance collections of revenue needed to complete closure and capping.

DEP will consider only those increases in amount or duration of disposal rate that are demonstrated as necessary to ensure that grade and slope requirements are met and revenue sufficient for

completion of closure and capping is made available. An analysis of alternative engineering solutions to address site topography (e.g. modified grades) and alternative sources of capping funds (e.g. bonding) will be required in support of any increased disposal rate under this policy.

In negotiating consent orders, DEP may also consider whether the municipality is receiving material or financial assistance through the Third Harbor Tunnel/Central Artery Project. Maximizing available air space shall not be a factor in DEP's evaluation of any request for an increased disposal rate. If a municipality executes a consent order with increased tonnage under this policy but fails to secure the anticipated volume of material or the projected revenues, DEP shall not consider these circumstances to warrant any extension of deadlines for closure or capping established in a consent order.

D. **Reservation of Funds**

Any consent order providing an increased disposal rate under this policy shall be conditioned upon the municipality establishing an Enterprise Fund, pursuant to M.G.L. Chapter 44, Section 53F 1/2, in which an amount of revenue approved by DEP is reserved exclusively for costs related to closure, capping and, if applicable, post-closure monitoring of the site. In determining the amount that must be held in reserve, the applicant shall provide DEP with a complete estimate of all closure and capping costs.

E. **Recycling**

The municipality will be required to present information on the feasibility of undertaking or expanding activities that promote recycling or composting. For non-MSW wastes, particularly C&D, this assessment may include, without limitation, conducting processing/recycling activities at the site, allocating all or part of the increase to residuals from off site C&D processing operations, or providing a price preference for debris from which recyclable materials have already been removed. Additional MSW recycling activities may include adoption of a unit pricing source reduction program, implementation of curbside collection of recyclable and compostable materials where waste is also collected curbside, initiation of a program for collection of household hazardous wastes such as paints and motor oil, or improvement of source reduction and waste diversion rates through additional public education.

POLICY BACKGROUND

In adopting this interim policy, DEP considered several factors. The solid waste regulations have, since 1990, recognized that accelerating closure of unlined landfills may take precedence

over strict compliance with capacity needs analysis requirements. 310 CMR 19.038(1)(a)(4)c states: "a vertical expansion of an existing landfill which results in closure of the facility within two years shall, at the discretion of the Department..." not be required to comply with needs analysis criteria. This policy provides guidance on how DEP will narrowly apply this provision of the regulations in light of the passage of time since its promulgation over five years ago.

The 1994 Update allowed for development and expansion of non-MSW capacity without limitations based upon analysis of capacity needs. Therefore, it would have been reasonable for a municipality to assume that a proposed expansion of its landfill's C&D disposal rate to reduce closure costs would be acceptable, provided it was consistent with closure deadlines.

Only upon release of its draft 1995 Update did DEP propose a total capacity system analysis under which non-MSW capacity expansions would be evaluated relative to the projected need for capacity statewide. Municipalities could not have been expected in that short a period of time to develop alternative financing strategies that met both the draft 1995 Update's capacity restrictions and DEP's landfill closure schedule. Thus, this policy was developed so DEP could take into account the reasonable expectations of municipal officials.

The final 1995 Update acknowledges that there is a significant degree of unpredictability about non-MSW waste generation. Changes in the economy and the pace of major infrastructure and construction projects can cause annual variations in the need for disposal capacity. Therefore, in addition to the public health and environmental benefits of accelerated landfill closure, allowing municipalities to accept additional non-MSW during these two years will provide a "safety net" or buffer for meeting unanticipated non-MSW capacity shortfalls.

DEP recognizes the total volume of non-MSW capacity created through implementation of this policy, in addition to subsequent permits which may be granted, could create disposal capacity in excess of what the 1995 Solid Waste Master Plan Update projects is needed to manage this waste stream. On balance, however, DEP believes the long term environmental benefits of accelerating the closure of many unlined landfills exceed the potential short term risks that excess disposal capacity may pose to continued expansion of the non-MSW recycling and processing markets.

DEP has attempted to estimate the number of sites which might seek and be considered eligible to accept additional non-MSW under this policy. This evaluation was based on pending applications, communications with municipal officials, and estimates of the remaining operating life of active unlined landfills. While there remains significant uncertainty, DEP

estimates that there are 20 landfills with an average disposal rate of approximately 10,000 tons per year that might request and be considered eligible to receive a tonnage increase under this policy. What cannot be anticipated is the individual or combined amount of capacity increase that might be requested above current tonnage rates.

Fixing a uniform percentage limit on single site increases would be simple to apply, but a "one size fits all" approach would ignore site-specific factors such as existing tonnage limits, proximity to sensitive receptors, landfill topography and the financial constraints of the municipalities. DEP believes that closure and capping of these sites would be best be facilitated by evaluating each request against site-specific conditions. Such limits should be considered if it appears that increased closure-related disposal of C&D is having a significant negative impact on the C&D recycling market. DEP will continuously evaluate the effects of disposal increases on recycling market development. DEP reserves the right to modify, suspend or revoke this policy based its findings.

Municipalities may request increased closure-related disposal rates for different reasons. In some cases, substantial amounts of material may be needed to achieve the slopes and grades necessary to properly apply impermeable capping materials and promote surface water runoff. Without additional non-MSW, clean soil might have to be used – increasing closure costs and wasting a finite natural resource. For some applicants, the prime motivation will be to generate revenues to offset expenses associated with closure and capping, because adequate funds have not been accumulated from landfill operations up until now.

Appendix M

Biosolids Applications by the Commonwealth of Massachusetts

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Pallets To Be Ordered: 46
Bags Ordered: 2,300 (50 bags/pallet)
Tons to be applied: 46 (40 lb. bags)
Acres to be applied: 14 acres (3 bags/1000 ft^2/application; 43,560 ft^2/acre)

Locations Chosen for Application

Region 1: 8 pallets

Myles Standish State Forest, Carver
A. 2.5 acres of beach grass
B. 3 acres of roadside
C. 6 acres of Fish and Game Wildlife Area

Pilgrim Memorial (Plymouth Rock) State Park, Plymouth
A. .25 acres of grass

Shawme Crowell State Forest
A. Roadside, wildflowers, Rhododendrums

Region 2: 4 pallets

Lawrence Heritage, Lawrence (flower beds, trees)
Lynn Heritage, Lynn (flower beds, trees)
Lowell Heritage, Lowell (flower beds, trees)
Roxbury Heritage, Roxbury (flower Beds, trees)
Maudslay State Park, Newburyport (flower beds, trees)

Region 3: 10 pallets (some spring and some Fall application)

Blackstone River State Park, Uxbridge (grass, fields)
Cochituate State Park, Wayland (grass, trees)
Douglas State Forest, Douglas (tentative) (grass, trees)
Hopkinton State Park, Hopkinton (grass)
Quinsigamond State Park, Worcester (grass)

Region 4: **16 pallets (scheduled for Fall application)**

Chicopee Memorial State Park, Chicopee (entryway grass and trees and other grass areas)
Erving State Forest, Erving (grass, trees, shrubs)
Holyoke Heritage State Park, Holyoke (on grass, oriental trees, flower beds)
Lake Dennison State Park (grass, ornamental trees)
Mount Sugarloaf State Reservation, South Deerfield (grass)
Otter River State Forest, Baldwinville (grass, trees)
Robinson State Park, Agawam
Skinner State Park, Hadley (grass)
Streeter Point Recreation Area, Sturbridge (grass, shrubs)
Wells State Park, Sturbridge (grass, trees)
Wendell State Forest, Wendell (grass)

Region 5: **16 pallets (scheduled for Fall application)**

Beartown State Forest, Monterey (grass)
C. M. Gardner State Park, Huntington (grass)
Clarksburg State Park, Clarksburg (grass)
D. A. R. State Forest, Goshen (grass, trees)
Granville State Forest, Granville (grass)
Mohawk Trail State Forest, Charlemont (grass, fields)
Mount Greylock State Reservation, Lanesborough (grass, trees, shrubs)
Mount Washington State Forest, Mount Washington (grass)
Natural Bridge State Park, North Adams (grass, shrubs)
October Mountain State Forest, Lee (grass)
Pittsfield State Forest, Pittsfield (grass)
Sandisfield State Forest (York Lake), Sandisfield (grass)
South Mountain Regional State Park (grass)
Tolland State Forest, Otis (grass)
Western Gateway Heritage State Park, North Adams (grass, shrubs)
Windsor State Forest, Windsor (grass, shrubs)

Forestry: Various landings currently held in reserve for future harvesting.

METROPOLITAN DISTRICT COMMISSION: **1 pallet to be ordered**

Stadiums: **To be applied the week of April 25th, 1995**
Hormell Stadium, Medford
Dilboy Stadium, Somerville
Kelly Field, Hyde Park

Flower Beds: **To be applied the week of May 15, 1995:**
Admiral Hill Park, Chelsea
Leverett Circle - flower beds
Esplanade, Boston - two flower beds near Hatch Shell
Charles Street Circle - flower beds
Arlington Street near Arthur Fiedler statue - flower planter

<u>BUREAU OF STATE OFFICE BUILDINGS</u>: **Application scheduled for month of April**

Saltonstall Grounds - lawn leading to State House
- flower beds around high rises

State House - flower beds
- along retaining wall adjacent to brick stairs
- around flag poles

BOLD indicates a high profile site

Appendix N

List of Publications from the Division of Solid Waste Management

The following Division of Solid Waste Management publications are available from the DEP Infoline (617-338-2255).

Policies

1. Lead Acid Battery Bans
2. Interim Oil Ash Disposal
3. Coal Ash Lanfill Cover & Disposal
4. Policy for the Disposal of Urea Formaldehyde Foam Insulation (UUFI)
5. Tire Disposal of Stockpiling
6. Ash Management and Disposal Policy
7. Ash Sampling & Analysis Guidance
8. Establishment & Enforcement of Tonnage Limits and Solid Waste Facilities
9. Asbestos Guidelines
10. Reuse and Disposal of Contaminated Soils at Landfills

Guidance Documents

1. Existing Solid Waste Management Facility Permitting Guidance
2. Financial Assurance Requirements Guidance Document for Use with 310CMR 19.051
3. Guidance on Compliance with 310CMR 19.038 (2)(d) Twenty-Five Percent Recycling Requirement
4. Comprehensive Guidance Document to Solid Waste Disposal Facilities for Implementation of Disposal Restrictions Covering Glass, Metal and Plastic Containers, Paper, Leaves and Yard Waste, Lead-Acid Batteries, White Goods and Whole Tires - Effective January 1, 1995
5. Landfill Assessment & Cleanup Repermitting Guidance
6. Landfill Technical Guidance Manual
7. Outline for Solid Waste Site Assessment

Miscellaneous

1. Guide to Regulations for Using or Processing Asphalt, Brick and Concrete and Rubble (ABC)
2. Municipal Recycling Contacts for all 351 Cities and Towns in Massachusetts

Disposal Facilities

1. Active Ash Landfills
2. Active Combustion Facilities
3. Active MSW (municipal solid waste) Landfills
4. Active Lined Solid Waste Landfills (MSW and other solid waste landfills)
5. Active Stump Dumps & Demolition Landfills
6. Active Transfer Stations
7. General Information on Operating Solid Waste Combustion Facilities
8. Inactive and Closed Solid Waste Landfills (MSW and other solid waste landfills)
9. Tire Piles in Massachusetts

Solid Waste Management Reports

1. Update of the Solid Waste Master Plan - Draft
2. Update of the Solid Waste Master Plan - Appendices
3. Status Report on Cities and Towns: MSW Generation and Disposal

Recycling

1. Apartment Building Recycling: A Manual for Apartment Owners and Managers
2. Apartment Building Recycling Manual
3. Buy Recycled: Product Procurement and Information Source Guide
4. Curbside Collection of Recyclables
5. Commercial Recycling Basics
6. European Plastics Recycling, Parts 1 to 4
7. Financing for Recycling Related Businesses: A Guide to MA Economic Development Agencies and Programs
8. Municipal Recycling Ordinances: Questions and Answers for MA Municipalities
9. Municipal Recycling Program Examples
10. Municipal User Fees
11. Recycled Products Guide
12. Recycling Programs In Massachusetts Cities and Towns Curbside and/or Dropoff
13. Recycling Questions and Answers
14. Recycling Services Directory and Markets Guide for Massachusetts
15. Scrap Tire Management in Massachusetts: Questions and Answers for Municipal Waste Management Officials
16. Transfer Stations: A Guide for MA Municipalities
17. Value Added by Recycling Industries in Massachusetts
18. Waste Composition Studies: Literature Review and Protocol
19. White Goods Management in Massachusetts
20. 1993 C&D Waste Processing Survey

Composting

1. Composting: Introductory Profiles Agricultural Sludge and Solid Waste Composting
2. Composting Programs in Massachusetts Cities and Towns
3. Composting Program Technical Assistance
4. Don't Trash Grass Brochure
5. Guidelines for Centralized Grass Composting
6. Home Composting Bin Ordering Information for Municipalities
7. Home Composting Bin Design Sheets
8. Home Composting Brochure
9. Home Composting Handbook: How to Promote Home Composting in your Community
10. How to Start A Christmas Tree Chipping Program
11. Leaf and Yard Waste Composting Guidance Document (Large-Scale)
12. Municipal Leaf Composting: An Introduction to the Planning Process
13. Notes for a Short Course on Municipal Scale Leaf and Yard Waste Composting
14. Rodent-Proof Compost Bins
15. Table of Collection Options for Leaves
16. Thermometers (Vendor List)
17. Vermicomposting Information and Bin Design Sheets (Worm Composting)

134.10: continued

(4) Determination of the Surchargeable Incident Type. When posting a Surchargeable Incident to the account of an Involved Operator or a Policyholder, the Merit Rating Board shall assign it a type. There shall be five types as defined below:

(a) Major Accident - An At Fault Accident, as further defined in 211 CMR 134.04 and 134.05, occurring on or after January 1, 1995, wherein the claim payment, exclusive of any deductible, exceeds $2,000 under either Property Damage Liability Coverage, Collision Coverage or Limited Collision Coverage; or, an At Fault Accident, occurring between January 1, 1984 and December 31, 1994, wherein claim payment, exclusive of any deductible, exceeds $1,500 under either Property Damage Liability Coverage, Collision Coverage or Limited Collision Coverage.

(b) Minor Accident - An At Fault Accident, as further defined in 211 CMR 134.04 and 134.05, occurring on or after January 1, 1995, wherein the claim payment, exclusive of any deductible, exceeds $500 but is not more than $2,000 under either Property Damage Liability Coverage, Collision Coverage or Limited Collision Coverage; or, an At Fault Accident, occurring between January 1, 1984 and December 31, 1994, wherein claim payment, exclusive of any deductible, exceeds $200 but is not more than $1,500 under either Property Damage Liability Coverage, Collision Coverage or Limited Collision Coverage; or, an At Fault Accident occurring prior to January 1, 1984, for which the Involved Operator received a Surcharge Notice under the Standard Merit Rating Plan, 211 CMR 79.00, shall also be considered a minor accident.

(c) Major Traffic Law Violation -- Those Traffic Law Violations so specified by the Commissioner for use in the 1996 Safe Driver Insurance Plan and so noted in Appendix A of 211 CMR 134.00.

(d) Minor Traffic Law Violation -- Those Traffic Law Violations so specified by the Commissioner for use in the 1996 Safe Driver Insurance Plan and so noted in Appendix A of 211 CMR 134.00.

(e) Comprehensive Claims -- Any claim payment made under Comprehensive Coverage excluding claims for damages caused by acts of God.

(5) Posting of Comprehensive Claims. On receipt of a Comprehensive Claim Notice from an Insurer in accordance with 211 CMR 134.06, the Merit Rating Board shall post a Surchargeable Incident for the Comprehensive claim to the account of the Policyholder. In the case where two individuals are listed as the policyholders and joint owners of the insured vehicle(s), the first person listed on the policy shall be considered to be the policyholder for the purpose of 211 CMR 134.10(5).

(6) Multiple Surcharged Incidents. If an Involved Operator or Policyholder has two or more Surchargeable Incidents on file at the Board, all of which arose from the same incident, the Merit Rating Board shall report to an Insurer the Surchargeable Incident with the greatest number of Surcharge Points as specified in 211 CMR 134.11 and 134.12.

134.11: Computation of Operator SDIP Step

(1) Information Used for Computation. In response to a request from an Insurer for SDIP Information for a Policy subject to the 1996 Safe Driver Insurance Plan, the Merit Rating Board shall compute and report to the Insurer the Operator SDIP Step for each Listed Operator. The Insurer shall adjust the premium to the Policyholder by using the Operator SDIP Step for each Listed Operator as reported by the Merit Rating Board.

(2) Operator SDIP Step. Each Listed Operated is assigned an Operator SDIP Step based on the Operator's driving history record. Each Operator starts with an operator SDIP Step value of 15 (the Neutral Step). Surcharge Points for Surchargeable Incidents in the Policy Experience Period are added to the starting step value; and then Credit Points earned by the Operator are subtracted.

(3) Surcharge Points. Only Surchargeable Incidents that are within the Policy Experience Period shall be used in calculating Surcharge Points, however, Surcharge Points for Surchargeable Incidents in the sixth year of the Policy Experience Period shall be set at zero. The Merit Rating Board shall use the Surcharge Date of an incident to determine which Surchargeable Incidents are within the Policy Experience Period. The Surcharge Points assigned for each Major Accident, each Minor Accident; each Minor Traffic Law Violation and each Major Traffic Law Violation are set forth in 211 CMR 134.15.

134.11: continued

(4) Credit Points for Incident-Free Years. Based on each Listed Operator's Starting Step Date, one Credit Point is earned by a licensed operator for each Incident-Free Year within the Policy Experience Period. An Incident-Free Year is any of the series of one-year periods immediately preceding the Policy Effective Date and within the Experience Period of the policy for which the Operator had no Surchargeable Incidents.

(5) Operator SDIP Step Range. For policy year 1996, and subsequent policy years, the Operator SDIP Step ranges from 9 to 35. The minimum Operator SDIP Step, best credit, is 9; the maximum Operator SDIP Step is 35.

(6) Experience Period. The Policy Experience Period for policy year 1996, and subsequent policy years, is the six year period immediately preceding the policy effective date, however, a Surchargeable Incident in the sixth year (as determined by the Surcharge Date) will not be assigned Surcharge Points. A Surchargeable Incident in the sixth year will prevent an operator from earning an incident-free year.

(7) Clean Slate Rule. For policy year 1996, and subsequent policy years, an Operator is assigned Credit Points to reduce the Operator's SDIP Step to 14 if all of the following conditions are met:

(a) the operator has a three year period of incident-free driving within the Policy Experience Period;

(b) the three year period occurs after January 1, 1987;

(c) the operator's step at the end of the incident-free period is greater than 14.

Points for Surchargeable Incidents within the Policy Experience Period which have Surcharge Dates that are recorded after this three year Incident-Free period are added to Operator SDIP Step 14.

134.12: Application of Operator SDIP Step

(1) Policy Issuance. No policy subject to the 1996 Safe Driver Insurance Plan shall be issued without SDIP Information except as approved by the Commissioner and as specified in the Manual of Administrative Procedures for Policy Inquiries.

(2) Coverage Selections Page. Each Insurer shall assure that the first Coverage Selections Page sent to a Policyholder shows the total premium, correctly adjusted for the Operator SDIP Step, unless an explicit provision of the Manual of Administrative Procedures for Policy Inquiries allow, or the Insurer has requested, and has received from the Commissioner, in writing, a waiver that allows the Insurer to display the total premium adjustment amount for the Policy either on a replacement Coverage Selections Page or on an invoice for the Policy, in lieu of displaying it on the initial Coverage Selections Page, as required by 211 CMR 134.12(2).

(3) Safe Driver Insurance Plan (SDIP) Statement. Each Insurer shall assure that each Policyholder not eligible for the lowest Operator SDIP Step (best credit) receives an itemization on a form approved by the Commissioner of the Operator SDIP Step assigned to each listed operator. The SDIP Statement and the method of mailing shall conform to the requirements specified in the Manual of Administrative Procedures for Policy Inquiries.

(4) SDIP Step Values. At the same time automobile insurance rates are established pursuant to M.G.L. c. 175, § 113B, the Commissioner will assign percentage values to SDIP Steps, which may vary according to the affected Liability Coverages and Collision Coverage irrespective of the class and territory of the policy.

(5) Policy Application. The Operator SDIP Step will be applied on a per vehicle basis. Operators will be assigned to vehicles using the ratio that one operator-year of exposure equals one vehicle-year of exposure. The Operator SDIP step for each operator will be calculated by adding to the Neutral Step (step 15) the number of points assigned to each surchargeable incident classification within the experience period and then subtracting one credit point for each incident-free year.

134.12: continued

(a) Single Vehicle Policies. The premium adjustment shall be computed by assigning the listed operator with the highest Operator SDIP Step to the vehicle producing the highest combined premium for Parts 1, 2, 4 and 7, and shall not reflect the Operator SDIP Step of any other listed operator. In cases where separate policies are issued by the same insurer to the common owner of wo or more vehicles the listed operator with the highest operator SDIP step is assigned to the vehicle producing the highest combined premium.

(b) Multi-Vehicle Policies. The premium adjustment shall be computed by assigning the listed operator with the highest Operator SDIP Step to the vehicle producing the highest combined premium for Parts 1, 2, 4 and 7. For each subsequent vehicle, the premium adjustment shall be computed by assigning the listed operator with the next highest step to the vehicle producing the next highest combined premium for Parts 1, 2, 4 and 7 until all vehicles are exhausted. If the number of vehicles exceeds the number of listed operators, such excess vehicles shall be assigned the step of the operator with the lowest step unless such operator's step is above Operator SDIP Step 15. In such case, the excess vehicles shall be assigned Operator SDIP Step15. This rule also applies in cases where separate policies are issued by the same insurer to the common owner of two or more vehicles.

(c) Multi-Vehicle Billings. An individual's Operator SDIP Step, if greater than 15, may not be applied on more than one policy in effect at the same time by either the same or different insurers.

(6) Refunds. Whenever the Operator SDIP Step is decreased by reason of a reversal by the Superior Court or the Board of Appeal of an incident previously reported and billed, insurers shall rerate policies.

(7) Affirmative Duty. All Insurers or their agents have an affirmative duty to correctly apply the Operator SDIP Step for each Listed Operator.

(8) Penalties. Failure to correctly apply the Operator SDIP Step for each Listed Operator may subject the Insurer to penalty set forth in 211 CMR 134.19.

134.13: Earned Premium Not Paid

(1) Policies Cancelled. Earned Amounts. In the event of the cancellation of a Policy subject to the 1996 Safe Driver Insurance Plan for which the insurer has billed but failed to collect monies from the Policyholder equal to the earned premium, the Insurer may report the earned but unpaid premium amount to the Merit Rating Board as provided in the Manual of Administrative Procedures within 120 days of cancellation. The Merit Rating Board may reject any submission later than 120 days from the cancellation date.

(2) Posting of Unpaid Premium. Upon notification of unpaid earned premium from an Insurer in accordance with 211 CMR 134.13(1), the Merit Rating Board shall post to the account of the Policyholder, a record which so indicates.

(3) Reporting of Unpaid Premium. In response to a request from an Insurer for SDIP Information for a Policy subject to the 1996 Safe Driver Insurance Plan, the Merit Rating Board shall report to the Insurer any unpaid earned premium, as listed on the Merit Rating Board's records at time of inquiry, for any Listed Operator.

(4) Policy Application. When an insurer receives a response record from the Merit Rating Board indicating that one or more of the Policy's Listed Operators has unpaid earned premium due a previous insurer within the previous year, the current insurer may take such action, including the refusal to insure, as allowed by law. If the current insurer does not take any action, the Merit Rating Board shall refuse to accept any unpaid earned premium record for the current Policy.

(5) Offsetting Records. Each insurer that has submitted an unpaid premium record to the Merit Rating Board, as provided in 211 CMR 134.13(1), and subsequently collects that unpaid earned premium, must, within 30 days of said collection, submit an offsetting record as prescribed in the Manual of Administrative Procedures.

134.13: continued

(6) Reporting. Annually, the Merit Rating Board shall issue a report to the Commissioner summarizing the following:

(a) The total dollar value of all unpaid earned premium records reported to the Board in the preceding year that have not been offset as provided in 211 CMR 134.13(5).

(b) The total dollar value of all cases wherein unpaid earned premium due a previous insurer was reported to the current insurer and the current insurer did not take any steps to promote the collection of this premium.

134.14: Reporting of Information

Insurers shall submit to the commissioner, to the Merit Rating Board or to the Designated Statistical Agent, such records, statistics, or other compilations of data pertaining to the 1996 Safe Driver Insurance Plan as the Commissioner or the Merit Rating Board may require. The Commissioner shall prescribe the form of such submissions. The Designated Statistical Agent shall send to the Merit Rating Board copies of statistical records noted above and copies of any statistical records forwarded to the Automobile Insurers Bureau of Massachusetts for all policies subject to the 1996 Safe Driver Insurance Plan as directed by the Commissioner.

134.15: Schedule of Surcharge Points

For Policy Year 1996 and subsequent policy years, Surcharge Points will be assigned for each incident as follows (unless otherwise amended by the Commissioner):

(1) Major Accident. Four Surcharge Points shall be assigned to each Major Accident, as defined in 211 CMR 134.10(4)(a), that is within the Experience Period of the Policy.

(2) Minor Accident. Three Surcharge Points shall be assigned to each Minor Accident, as defined in 211 CMR 134.10(4)(b), that is within the Experience Period of the Policy. Three points shall be subtracted from the points otherwise applicable to a Minor Accident if the following conditions are met:

(a) the accident occurred prior to January 1, 1984;

(b) the accident is the only Minor or Major accident within the Policy Experience Period; and,

(c) at least one complete year has elapsed between the Surcharge Date for the accident and the Policy Effective Date. (Point totals shall not be reduced below zero.)

(3) Major Traffic Law Violation. Five Surcharge Points shall be assigned to each Major Traffic Law Violation, as defined in 211 CMR 134.10(4)(c), that is within the Experience Period of the Policy.

(4) Minor Traffic Law Violation. Two Surcharge Points shall be assigned to each Minor Traffic Law Violation, as defined in 211 CMR 134.10(4)(d), that is within the Experience Period of the Policy. No Surcharge Points shall be assigned to a Minor Traffic Law Violation which is the first Traffic Law Violation, as determined by Surcharge Date, within the Experience Period if the disposition of the violation was non-criminal under M.G.L. c. 90C.

(5) Comprehensive Claims. No Surcharge Points for Comprehensive Claims shall be assigned to Policies with effective dates prior to January 1, 1985. Surcharge Points for Comprehensive Claims may be assigned to policies affording Comprehensive Coverage which become effective in calendar year 1985; however, no points may be assigned unless four or more comprehensive claims totalling $2,000, or more have occurred since January 1, 1984.

134.16: Merit Rating Board Liaison

(1) Designation. Each Insurer with one or more Policies subject to the 1996 Safe Driver Insurance Plan shall designate an employee as its Merit Rating Board Liaison, and shall notify the Commissioner and the Merit Rating Board in writing of its designation in the manner prescribed in the Manual of Administrative Procedures. Within ten working days of the reassignment of a Merit Rating Board Liaison, an Insurer shall replace or redesignate its Merit Rating Board Liaison and notify the Merit Rating Board in writing of the replacement or redesignation.

134.16: continued

(2) Information. Each Insurer shall be responsible for ensuring that its Merit Rating Board Liaison becomes and remains informed of the provisions of 211 CMR 134.00 and of the Manuals of Administrative Procedures.

134.17: Industry Advisory Committee

The Commissioner shall establish an Industry Advisory Committee on the1996 Safe Driver Insurance Plan which shall consist of at least 12 Merit Rating Board Liaisons and other interested parties appointed by the Commissioner. The Committee shall provide advice to the Commissioner or to the Merit Rating Board concerning 211 CMR 134.00 or any amendment thereto, and to the Merit Rating Board concerning the contents of the Manual of Administrative Procedures and any amendments or additions thereto.

134.18: Manuals of Administrative Procedures

The Merit Rating Board shall prepare and distribute, with the assistance of the Industry Advisory Committee specified in 211 CMR 134.17, a Manual of Administrative Procedures for SDIP Claims and a Manual of Administrative Procedures for Policy Inquiries which set forth the administrative rules to be followed by all Insurers in implementing the 1996 Safe Driver Insurance Plan in accordance with the provisions of 211 CMR 134.00. Copies of the proposed Manuals, or of any proposed amendment to the Manuals, shall be sent to each Massachusetts Merit Rating Liaison and to any other interested party.

134.19: Penalties

(1) Any Insurer or person violating 211 CMR 134.00 shall be subject to a fine of not more than $500 for each violation in accordance with M.G.L. c. 175, § 194.

(2) Any Insurer or person who disseminates or uses SDIP Information for any purpose other than for motor vehicle insurance purposes or criminal law enforcement purposes shall be subject to a fine of not more than $1,000 for each offense or by imprisonment for not more than one year, or both, in accordance with M.G.L. c. 6. §183.

134.20: Severability

If any section or portion of a section of 211 CMR 134.00 or its application to any person, entity or circumstance is held invalid by any court, the remainder of 211 CMR 134.00 or the application of such provision to other persons, entities or circumstances shall not be effected thereby.

REGULATORY AUTHORITY

211 CMR 134.00: M.G.L. c. 175, §113B as amended by St. 1988, c. 273, §38, and as further amended by St. 1990, c. 171.

NON-TEXT PAGE

APPENDIX: TRAFFIC LAW VIOLATIONS

The following abbreviations are used in Appendix A:

"M.G.L. c. __ , § __",	Chapter and Section of the Massachusetts General Laws
"__ CMR __",	Code of Massachusetts Regulations

MAJOR TRAFFIC VIOLATIONS

Driving to Endanger or Reckless Driving	M.G.L. c. 90, § 24
Liquor and Narcotics, operating under the influence of (including assignment to a driver alcohol education program under Ch. 90 § 24D)	M.G.L. c. 90, § 24
Operating after Revocation of License	M.G.L. c. 90, § 23
Vehicular Homicide	M.G.L. c. 90, § 24G

Out-of-State Incidents to be counted as Major Violations: Operating under the influence of Liquor and/or narcotics, (including assignment to a driver alcohol education program)
Vehicular Homicide

ADDITIONAL MAJOR TRAFFIC VIOLATIONS FOR INCIDENTS THAT OCCUR ON OR AFTER JANUARY 1, 1990

Leaving Scene of Accident after Injuring a Person	M.G.L. c. 90, § 24
Leaving Scene of Accident after Injuring a Property	M.G.L. c. 90, § 24
Operating after Suspension of Drivers License	M.G.L. c. 90, § 23
Refusing to Stop for Officer	M.G.L. c. 90, § 25

MINOR TRAFFIC VIOLATIONS

Accident, hit and run	M.G.L. c. 90, § 24
Alleys and driveways, emerging from, must stop	720 CMR 9.06(20)
Allowing vehicle to stand unattended, motor running	M.G.L. c. 90, § 13
Anything on or in vehicle or on person interferes with operation	M.G.L. c. 90, § 13
Attempting a speed record	M.G.L. c. 90, § 13
Backing up for missed ramp	720 CMR 9.08(3) 730 CMR 5.04(5)
Blind pedestrians, must stop for	M.G.L. c. 90, § 14A
Blow horn when necessary	720 CMR 9.06(15) 730 CMR 3.05(13)
Brakes, operating without	M.G.L. c. 90, § 7
Bridges, speed law	M.G.L. c. 85, § 20
Channelizing island, no driving on	720 CMR 9.06(22) 730 CMR 5.04(5)
Crosswalk, motor vehicle not to enter if his car will block it	M.G.L. c. 89, § 11
Crosswalk, operator yield to pedestrian	M.G.L. c. 89, § 11
Cutting in after passing	720 CMR 9.06(3)

Appendix A: continued

Directional signals, devices required	M.G.L. c. 90, § 7
Directional signals, hand or mechanical required for lane change	M.G.L. c. 90, § 14B
Drag racing, speeding	M.G.L. c. 90, § 17B
Driving in "breakdown lane"	M.G.L. c. 89, § 4B
Driving within 8 feet of street car stopped for passengers	M.G.L. c. 90, § 14
Emergency vehicles, right of way	M.G.L. c. 89, § 7
Exhibit another license	M.G.L. c. 90, § 23
Failure to ascertain if it is safe to change lanes	M.G.L. c. 89, § 4A
Failure to keep to the right when turning right	M.G.L. c. 90, § 14 350 CMR 4.01(4) 720 CMR 9.06(16) 730 CMR 5.04(5)
Failure to keep to the far left when turning on a one/two way street	M.G.L. c. 90, § 14
Failure to fasten a trailer to a tow vehicle with proper safety chains	M.G.L. c. 90, § 7
Failure to give proper stopping or turning signals	M.G.L. c. 90, § 14, 350 CMR 4.01(4), 730 CMR 3.05(7), 730 CMR 5.04(5)
Failure to keep in right lane	M.G.L. c. 89, § 4B, 350 CMR 4.01(4), 720 CMR 9.06(16), 730 CMR 3.05(5), 730 CMR 5.04(5)
Failure to keep to right when view is obstructed up to 400 feet	M.G.L. c. 89, § 4, 720 CMR 9.06(16)
Failure to see that movement can be made in safety before starting, stopping, turning or backing up	720 CMR 9.06(9), 730 CMR 5.04(5)
Failure to stop at sign or signal at intersection	M.G.L. c. 89, § 9
Failure to use child restraint	M.G.L. c. 90, § 7AA
Fire apparatus, driving within 300 feet if going to a fire	M.G.L. c. 89, § 7A
Fire apparatus, failing to pull to right and stop	M.G.L. c. 89, § 7A
Fire Department, interfering with	M.G.L. c. 89, § 7A
Flashing red traffic signal, failure to stop	M.G.L. c. 89, § 9, 730 CMR 3.05(4)
Following too closely	720 CMR 9.06(7), 730 CMR 3.05(6), 730 CMR 5.04(5)
Hand signals, failure to give	M.G.L. c. 90, § 14B, 350 CMR 4.01(4)
Headlights, dimming from high beam	M.G.L. c. 90, § 31, 540 CMR 2.12, 730 CMR 3.05(11), 730 CMR 5.04(5)